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THE COMPLAINT MAN.

By E. J. DEMARSH.

I do not mean the grumbler, nor the man who always has something the matter with him, but the poor, patient soul who listens to recitals of other people's woes and soothes their angry passions. Every business has one or more. Sometimes that is all he has to do; more often, it is not, but on the whole job there is not a more important nor a more thankless position.

Especially is this true of the man on the complaint desk of a public service corporation. Somehow, people have an idea that the main business of such organizations is "to do the public." Doubtless some of them have, but many a private combination has done the same. How ever, once let the patron of a public service corporation feel that he has a grivance, and in about eight cases out of ten, nothing is too unreasonable or too absurd for him to believe and assert. I have known people who were ordinarily most courteons and logical to become thoroughly rude and exasperating when arguing over a disputed bill. Of course, they were convinced of the truth of their suspicions or they would never have made the assertions they did, yet to listen to them and "look pleasant" required almost more than human endurance.

And right there is where the Complaint Man makes himself either invaluable or worse than useless to the concern he represents. To be a good Complaint Man takes all the tact, stamina, and steadfastness in the world. Not only must he patiently listen and courteously explain, but he must, as well, be able to put himself "in the other fellow's place," and, for the time being, think as he thinks and feel as he feels. Not only must he be judge and jury, but as well, the court, complainant and defendant; and when he is through with him, tne dissatisfied one should have become one of the Company's warmest friends.

A good point to bear in mind is that, before a man will listen very patiently, his interest and curiosity must be aroused; and at the same time, he must be made to feel that he is being dealt with justly and honorably. Some are afraid openly to admit the justice of a claim. They imagine confidence will be shaken and the business lose prestige in the complainant's eyes. Not so. If he suspects you are quibbling or trying to cover up, never again will he wholly believe in you. Nor will the matter end there; he will miss no opportunity of heralding his experience. It takes common sense as well as a good many other attributes to make a thoroughly good Complaint Man.

I have known clerks afraid to shoulder the responsibility of handling an angry or unreasonable patron. Such men do not belong on the public desk. Managers have enough worries and cares and responsibilities without being harassed by every petty detail. Unless you are sure, beyond question, that more harm than good will result from your keeping the matter in your own hands, hang on. Perhaps your present knowledge prevents an intelligent handling of the situation. If this be the case, tell the consumer so frankly and make arrangements for an early investigation and report.

Facts sometimes seem to bear out certain things which a careful investigation discloses are the result of causes so subtle in their nature as not easy to be discoverable. I recall the experience of one manager who had complaint of exceedingly large bills from a family who could not possibly, in the usual course of events, have consumed such a quantity of gas. The parties were eminently respectable and honorable, ordinary methods failed to detect the trouble, and the case seemed a poser. Among our gas fitters was an unusually intelligent and good looking young fellow. On one pretext or another, he made several visits to the house and became good friends with the girls in the kitchen. Noticing that there was no means of warming the room save with the heat of the gas range, he causually inquired how they got along in very cold weather. "Oh, that's easy," said one. "I just turn on the gas and open the oven door, and it gets as warm as toast." That solved the problem, but it took considerable intercession to induce the head of the house to retain that "expedient" maid in their employ. However, they did, and a more economical method of warming the kitchen saved future complications.

The Complaint Man cannot know too much, but he must allow circumstances, rather than himself, to proclaim the extent of his knowledge. He is important in the business; not unimportant. Even gas managers are human and have ways of letting out personalities that threaten to overshadow them or block the wheels of the business.

The good Complaint Man is always on his job; he is an excellent judge of human nature, and versatile in his methods; a "good mixer," yet abstemious in his habits and always master of himself. Not a thing that addles his brain, unsettles his nerves, or makes him "scrappy," will he indulge in. As a rule, the consumer will furnish all the "pepper" needed; it is up to the Complaint Man to provide the "ginger" and much, very much, soothing emollient.

Pertness and aggressiveness have no place at the Complaint Desk. To irritate or antagonize any one never pays; "smartness" and lack of tact often do both. Absence of competition in your particular line is no justification for disregarding other people's rights and feelings. I knew a gas manager who, just because he insisted on treating patrons fairly, for years held in abeyance all thought of rivalry or municipal ownership in his city. Of course, self-interest had something to do with his policy, but he really enjoyed seeing people satisfied, and felt it right they should be. To watch him handle a complaint in his genial, big-hearted way, was a treat. Of course, ordinarily, that was out of his line, but on special occasions he did it. Needless to say, since that day he has done bigger things. As I recall him, he was one of the best all-around men I have ever met, and by the way, that "all-aroundedness" is a splendid thing at the complaint desk. If one can but see big enough, feel big enough, and be big enough, he can cope with almost any situation that arises.

The Future of Gas Lighting.

[Written for the Southern Gas Association by E. D. BREWER.]

In every line of business it becomes necessary from time to time to adopt new ways, methods or policies to meet the changes in the demands of trade, and to keep pace with aggressive and wide awake competitors.

The gas business is no exception. The original use of gas was for lighting only and in an open flame, but in the past twenty years many changes have taken place. We have seen the gas range and water heater adopted to increase the sale of gas as a domestic fuel, and all kinds of industrial fuel appliances developed to extend the use of gas. We have seen commercial departments established and handsome show rooms built by nearly every gas company in the United States. We have seen the single incandescent gas mantle lamp adopted and used quite extensively, and later the gas arc lamp adopted for commercial lighting; and ways and means have been found of installing lamps on some maintenance plan, in order to assure the gas consumers of a good, reliable, highly efficient lighting system all the time.

The efforts made for gas lighting have been more or less necessary to successfully compete with our very aggressive competitor, electric lighting. In the years gone, gas lighting has had immense advantages over electric lighting in being superior in quality of light and far lower in cost to the consumer. This was the case even though gas lamps were not burning to their highest efficiency, or properly maintained; even at 50% efficiency we still have a decided advantage over electric lighting. In the last few years many improvements have been made in electric lighting, rates for electricity have been greatly reduced in many localities, and in most cases electric lamps are furnished free, or at cost for the latest type lamp. There begin to be cases where the economy of gas lighting in not so great as a few years back. The latest data we have on the relative cost to produce a given amount of illumination is, taking gas at $1.00 per 1,000 cubic feet and electricity at 10 cents per k. w., 30-100 of one cent to produce 1,000 Lumen-hours of light with a 3-burner gas arc lamp, while it cost 94-100 of one cent to produce the same illumination using the latest type nitrogen electric lamp. Thus we still have a safe margin of economy over the electric lamps; but where electricity is sold as low as three or four cents per k. w., with gas at $1.00 per thousand there is no great margin of economy in gas lighting, and it seems that gas companies, in order to hold their own in the lighting business, should now adopt some new scheme or method.

In order to retain their share of the lighting business, we believe the gas companies must ultimately adopt some plan of proper and complete maintenance of every incandescent gas lamp in town. Just what policy to adopt in the beginning is something more or less for the companies to decide according to their means; but a paper by Mr. H. C. Crafts, manager of the Pittsfield Coal Gas Company, Pittsfield, Mass., before the New England Section of the N. C. G. A., in March of this year, lays out a plan in full detail that should attract the attention of every gas man in the United States who is at heart interested in the future of gas lighting. A similar system has been adopted by the Consumers Gas Company, of Toronto, Canada. (See the paper by Mr. A. Hewitt, read before the N. C. G. A. meeting at Minneapolis in December, 1914.)

Gas companies throughout the country are rapidly coming to realize the importance of the maintenance of incandescent gas burners, including residence as well as commercial gas lamps, because it is recognized that the large majority of gas consumers do not or will not maintain their lamps in a high state of efficiency, and even in places where the gas company has well advertised its system of free labor in putting on new mantles and chimneys, only charging cost for the material, the consumer will delay requesting such service to postpone these little added expenses.

The plumber and dealers in gas-lighting supplies, when asked to repair gas lamps, do not understand the importance of cleaning the burner, bunsen nozzle and screen, with the result that where gas lamps are looked after by others than a gas company's representative trained for such work, these parts become dirty and foul even if mantles and chimneys are replaced with new ones as often as is necessary. The burners diminish in light and the customer wonders why. Such being a fact, it behooves every gas man to realize the importance of maintenance of all lamps, and to feel that he is selling a lighting service, not gas, at so much per 1,000 cubic feet. Some few gas men were keen enough to realize the importance of lamps maintained from the beginning. It is a historical fact that the Gas Light Company of Columbus, Ga., was the first gas company to adopt a plan of maintenance of incandescent gas lamps. We must bear in mind that, in the beginning, gas companies had nothing but gas lighting to support their business, and, in introducing the gas range, the gas lighting business paid the bill for the "coming-out party" of the debutante! The profit from the sale of gas for lighting made it possible for you to spend money to introduce new gas-consuming appliances; but with the present competition on the lighting end of the business it would seem that the time has come when the fuel end of the gas business should bear its share of all the expeuse, and, if necessary, begin to support the father of the gas business—gas lighting. The time is coming when gas lighting must get some support from its offspring, because there is keen competition against gas lighting, while there is scarcely anything, as yet, that closely competes with gas as a domestic fuel.

One of tbe objections raised to maintenance of gas lamps by the gas company is that it would be discriminating against the fuel business. There are several gas companies in this country charging a higher rate for gas for lighting than for fuel, which is discriminating against gas for lighting. On the other hand, quantity output always controls rates. If you were to lose the lighting business you could not afford to sell gas for fuel at the present rate.

My purpose in this article is not to predict or lead you to believe that you are or will lose the lighting business—quite the reverse. Still, it is well to consider this question in the right light and take the steps necessary to prevent such a loss. If necessary, we should not consider any reasonable expense too great to hold business. Let us look at the subject from this standpoint: If you had lost 50% of your entire output, representing the lighting, what would you give to regain it?

We have heard it said that gas lighting was too warm for Dixie, and we have seen Southern consumers have gas lighting partly on account of the heat. As one consumer remarked, "I need light seven months out of twelve. The other five months I need very little light, and can stand what heat it makes."

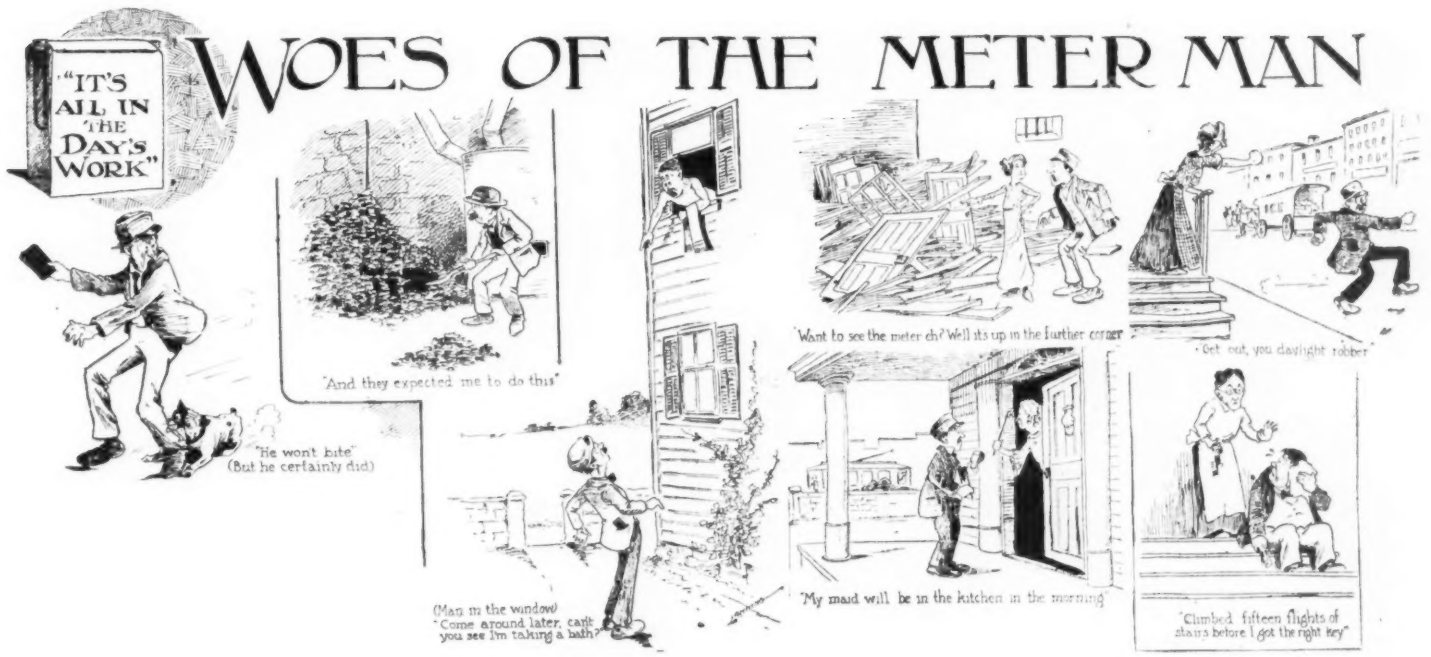
With direct, and especially indirect lighting electric fixtures, the 500-watt and the 750-watt type C electric lamp is being extensively used in the South, and yet someone says the South is too hot to use a gas arc lamp! Ever since Mr. Dexter read his paper on "Practical Ventilation", gas companies in the South have been giving the subject considerable attention, and less than a month ago I saw a gas company's carpenter swinging a transom in a store that needed ventilation long before the gas man captured the lighting contract, but it remained for gas lighting to make his store a place of fresh air. We have heard it said that gas lamps "smoke" the ceiling, and we have recently seen "smoked" ceilings where type C electric lamps drove the dust out of the air against the ceiling in the same old way!

With gas lighting the largest and most important branch of the gas business to-day, I believe that future gas lighting is assured. The gas companies will be sure to meet the maintenance emergency, and some practical system of maintenance for every gas lamp in town will be adopted by gas companies in the next few years; and these companies, in my opinion, will find ways to include the cost for such work in the rate for gas, so that the upkeep of gas lamps will become a part of the cost to distribute the gas. I believe the B. T. U. standard will be universally adopted, and the saving in manufacturing cost thus effected will be almost enough to cover the cost of free maintenance of incandescent gas lamps.

Many new gas units have been produced, and there will be one to fit every condition. With the new gas lamps there is a wide margin of economy in favor of gas, and even allowing for lack of maintenance, modern gas lighting is still from 50% to 75% a more economical lighting service than the latest modern lamp of any other lighting commodity.

In conclusion, I wish most to draw out in the discussion what is best for the future success of gas lighting. It is estimated that about 50% of all the artificial gas sold in this country is used for lighting purposes, and all this business is jeopardized by an aggressive competitor. What are we going to do to safeguard it? I have undertaken to suggest here, what in my opinion will best safeguard the business—that is universal maintenance of all gas lamps. We all realize that a well maintained gas lighting installation is difficult to displace, because it is impossible to duplicate it either in quality of light or cost to produce.

From the time the sun comes up in the morning until the twilight shadows gather, gas light puts cheer into the buildings constructed by man, and what has night to do with sleep while modern gas lighting makes night such a pleasant period for business and for recreation?


"IT'S ALL IN THE DAY'S WORK"
WOES OF THE METER MAN
"He wont bite" (But he certainly did)
"And they expected me to do this"
(Man in the window) "Come around later, can't you see I'm taking a bath"
"Want to see the meter eh? Well its up in the further corner"
"My maid will be in the kitchen in the morning"
"Get out, you daylight robber"
"Climbed fifteen flights of stairs before I got the right key"

And sometimes the Manager kicks because the route book turned-in shows a few "skips."

Report of Committee on "Distribution," Iowa District Gas Association.

Your committee on distribution has scanned the past years reports of distribution engineers of this country dealing with practice and research in this most important field, and although there is the usual difference of opinion as to the adaptability of certain new processes, it is safe to state that there have been introduced several methods heretofore practically unknown that will become standard in their respective fields of utility.

Applying to pipe line construction, there have been at least three distinct innovations:

1. Cast iron pipe in 16' lengths.
2. Matheson joint pipe.
3. Autogenous welding of steel and wrought iron pipe.

Aside from the features of leaking joints (which can easily be overcome by up-to-date joint making) and occasional fractures from frost or other strains, for urban low pressure distribution cast iron pipe does not seem to have been improved upon, the 16 foot lengths simply reducing the number of joints while adding to the weight and consequent difficulty in handling.

For joint making, the use of lead wool has been somewhat extended in large diameter cast iron mains, the cost of applying this joint having been considerably reduced through the use of the pneumatic hammer for caulking. The principle advantage of this joint appears to lie in its relative tightness when finished. Its advocates point out that the contraction due to the cooling of a hot poured joint and consequent shrinkage from the wall of the bell renders useless a large proportion of the metal intended to close the joint, and that when up-set in the usual manner at the mouth of the bell, a contract bond is insured only from the face of the joint to edge of the joint groove in the bell, thus reducing the shearing strength of the joint. The cost of the lead wool and cast lead joints seems to be about the same, and the cost of the cement joint is so much less (usually 50% to 75%) that it is difficult to convert the man who has had a successful experience with this joint. It is, however, conceded that the lead wool joint is most readily adapted to repair work and to making up joints in wet places.

Matheson joint pipe is a light weight especially prepared steel pipe in lengths of about 20 feet, provided with a modification of the bell and spigot type of ends, designed for a joint of poured lead. This pipe is protected by a heavy bitumen coating under a spiral wrapping of burlap, followed by an additional coating of the bitumen preparation. The joint after being made has to be coated and wrapped, and properly installed the pipe should prove of very long life. It does not, however, seem to possess any advantage over cast iron pipe, and it is not any cheaper when fittings are included. While it will not fracture and may be bent, unless the utmost care is exercised the purpose of the coating will be defeated in covering the joints, and particularly at service connections made after the main is laid. It no doubt has merit for long cross country runs, where it will not have to be branched frequently and no service connections are made.

For high pressure work, autogenous welding is beyond question a great advance in the art of making tight lines. This process consists in joining together plain and steel pipe by means of a homogeneous weld produced with the oxy-acetylene torch. It has so far been applied more extensively to long transmission lines of large diameter, but lends itself admirably to the joining of pipe for most any purpose, having been successfully employed in making the tap connection between service and street main, and even in the construction of rigid meter connection manifolds or headers. It would seem probable that this practice will appeal to high pressure operators in this district as it is obviously possible to render an installation "bottle-tight" under any condition of pressure.

There has been much discussion as to the relative merits of steel and wrought iron for main and service work. The latter material was formerly credited with many advantages not accorded the steel pipe, but in recent years improvement in steel pipe has largely dissipated former prejudices, until today it is claimed that the best prepared steel pipe surpasses wrought iron in strength and ductility, with the added advantage of lower cost. All steel or wrought iron pipe for underground work should be thoroughly coated. Of the various forms of pipe-coating, probably none is as efficient and as easily handled after application as the zinc covering known as "galvanizing." Other coatings present difficulties in the handling of the pipe, such as the fouling of cutting dies, etc., but are more generally used because they can be locally applied and at less expense. Every paint manufacturer has a paint for which he claims the properties required for an underground pipe covering, but the form of coating generally used is the following:

"Heat about 20 gallons of coal tar to a slow boiling point, and add 20 pounds of fresh-slaked lime sifted over the top and then worked down. Boil the mixture until it becomes pasty. Let it settle for a few minutes, and add 4 pounds of tallow and 1 pound of powdered rosin. Stir until thoroughly mixed and all ingredients are dissolved, then allow to cool. When ready for use, to each bulk of 45 gallons of the above mixture add 4 pounds of crude rubber dissolved in turpentine to the consistency of thick cream. Then heat the mixture to about 100° F., and immerse the service pipe, heated to about the same temperature. The mixture should not be heated higher than 100° F. If the preparation is too thick, it can be thinned down with kerosene when being heated for use. The pipe should preferably be dipped in a trough constructed for the purpose, but the coating may be applied with a brush."

The use of the iron pipe meter connection of a properly adjustable type is finding extended favor. Such a connection, with a shelf, gives the safest and most efficient sort of meter installation.

THE DISTILLATION OF WATER.

[From the paper by G. W. McKee, read before the Southern Gas Association.]

Any discussion of water stills that will enable an industrial gas salesman to appreciate their value as a source of gas revenue naturally involves an explanation of the uses of distilled water and of the reasons why it is to be preferred.

A partial list of the uses of distilled water is as follows:

1. For drinking purposes.
2. Caring for infants.
3. Manufacture of mirrors.
4. By wholesale druggists.
5. By retail druggists,
6. By film manufacturers.
7. By photo-engravers.
8. By electrotypers.
9. By electro-platers,
10. By bottlers.
11. Chemical laboratories.
12. Bleaching.
13. Dyelng.
14. Storing of rubber.
15. In storage batteries.
16. Manufacture of artificial mineral waters.
17. Manufacturing ink.
18. Blending liquors.
19. Manufacturing gas mantles.
20. In hospitals and sanitariums.
21. In hair dressing parlors.
22. In very large quantities in soap factories, laundries, breweries, woolen mfrs., ice plants, etc.

Water as a Beverage.—The public are learning that nothing has more influence on health than the quality and quantity of the water we drink. Its chief function is to dissolve and remove impurities, and this it cannot do if it enters the body saturated with salts and containing organic matter. Rather it will deposit in the system more solids, and the general rule of drinking 6 to 8 glasses of water a day, from being beneficial becomes dangerous. As there is a limit to the solvent properties of any liquid, drinking water to be most useful as a cleanser must be as free as possible from organic and inorganic substances.

The notion that the presence of mineral salts adds to the value of water as a beverage is a mistake. The farinaceous part of food alone is sufficient to supply all the lime the body needs.

The following diseases are often water borne: Typhoid fever, cholera, bacillary dysentery, amoebis dysentery; while indigestion, appendicitis, calculi in the bladder, calculi in kidneys, diabetes, Bright's disease and other intestinal and kidney disorders may result from drinking impure or hard water.

Spring Water.—Spring or well water is very seldom pure. In a more or less degree they have in solution poisonous animal refuse, called organic impurities, the germs of fevers and other diseases. A recent report of the Agricultural Experiment Station of Connecticut shows that out of 34 spring waters marketed 12 were unfit to drink because of these impurities.

It is argued by the vendors of spring waters that they are natural waters and the minerals (inorganic matter) contained are necessary to the human system; which is strange in view of the fact that no two of them are alike. Assuming that these waters are what they are claimed to be, i. e., free from germs, they are minus the many advantages of a pure aerated distilled water on account of the inorganic salts in solution. In this connection the opinion of Dr. D. H. Reeder may be of interest:

"A brief examination into the subject of water and our bodies shows us that nothing we put into our bodies in the shape of food is assimilated unless it has first been incorporated in a vegetable growth. (This includes meats, fish, nuts, fruits and cereals as well as all vegetables.) Any other materials that we put into our stomachs either as food, medicine or condiments is never incorporated into our blood or tissues, but is expelled by the vital forces of the body, or remains to clog the veins and impede the circulation."

Sterilized Water.—Purifying water by sterilization leaves the liquid a kind of bacteriological graveyard. To kill all the germs by this method the water must be heated to 260° and used within 24 hours. This is scarcely practical, and besides, even perfectly sterilized water still contains the inorganic impurities.

Filtered Water.—While municipal filtration plants reduce the danger from polluted water, they are not infallible. They must be efficiently supervised, and a single mistake at the plant may cause an epidemic of typhoid or other infectious disease. But even working under the most favorable conditions the resulting effluent does not conform to required standards of purity and potability.

Domestic filters are to be condemned. Though many accomplish mechanical cleansing, very few can be depended upon for the constant and complete removal of harmful bacteria. Their frequent cleaning is necessary, and this is a precaution which can very easily be neglected, so that often the filtered is more dangerous than the raw water. All of the inorganic dissolved salts. dissolved gases and most of the organic matter remains after filtration.

Uses for Distilled Water.

Caring for Infants.—In the first year after birth about 25% of children die, largely from intestinal disorders produced by errors in diet. Young babies drink very little water, so the effect of polluted water is probably from being mixed with milk. Extraordinary precautions should be taken in handling this food, as it is a most favorable culture for the typhoid bacilli. If water infected ever so slightly is used for rinsing receptacles, any organisms left undergo rapid multiplication and become distributed throughout a large volume of the liquid. Under favorable conditions 1 bacteria becomes 17,000,000 in 24 hours. If necessary to dilute infants' food, only distilled water should be used. The skin and hair of babies being extremely delicate, should never be touched with hard water.

Manufacture of Mirrors.—In dealing with silver salts in the manufacture of mirrors, distilled water is essential. All mirror companies either buy it or operate a still by steam. The coal boiler in use can often be replaced by a gas-burning unit.

Wholesale Druggists use distilled water in making medicinal preparations; a 2-gallon an hour size is usually suitable except for very large establishments.

Retail Druggists of over $5,000 commercial rating are considered good water still prospects. A ½-gallon or 1-gallon direct-fired appliance is adequate, unless the water is also used for drinking purposes, in which case a 2-gallon still is recommended.

Film Manufacturers say distilled water is indispensable in their work.

Photo-Engravers use distilled water in making silver solution. A 1-gallon or 2-gallon per hour wall type still, direct-fired, is ample for most plants.

Electrotypers use it in making up the copper bath, a 3-gallon still usually being a practical size.

Electro-plating, being an electro-chemical process, to obtain the best results it is essential that pure solutions be used: hence an abundant supply of distilled water must be available at all times. The size of the still and storage tank necessarily varies.

Establishments Bottling Soft Drinks, etc., are great opportunities for gas business. In Rockford a 12-horse power gas boiler has been used for this purpose continuously for 3 years; Peoria has a 25-horse power Eclipse Boiler installation. The extra cost of using distilled water is more than off-set by its advertising significance. These firms also market the distilled water in ½-gallon, 1-gallon and 5-gallon bottles, to domestic consumers.

If the still is located on the floor above the bottling machinery, the hot condenser water can be passed through a coil and made to heat a caustic solution for bottle washing. Passing out of the coil into a tank it becomes a bath for rinsing the bottles, making a very economical installation.

Chemical laboratories of high schools, colleges and commercial analytical laboratories require distilled water. A 2-gallon per hour still is usually large enough.

In Bleaching fabric with hydrogen peroxide or sodium peroxide the solvent must be free from mineral salts, for unless pure water is used in the beginning it is often necessary to treat the cloth with hydrochloric or oxalic acid and finally wash with distilled water.

Dyeing Plants.—Analine colors, such as magenta, soluble blues, methyl violet, malachite green, and safranine, dissolve poorly in calcareous waters. A heavy precipitate is formed which tends to imperfect shades and uneven work. The dye-bath should be prepared immediately before use and with distilled water.

Rubber stored under distilled water does not deteriorate, according to good authority.

Storage Battery Evaporation should be replaced with water as chemically pure as possible, and of course the original solution should be made with water of the same purity. Consequently, all storage-battery factories and electric garages are prospects for water stills. Garage conditions are fully met with a 2-gallon direct-filled still. Battery manufacturers require steam stills, with capacities from 5 gallons up.

Artificial Mineral Waters.—All naturally-occuring mineral waters, viz., vichy, appolinaris, kissingen, lithia, shasta, etc., and ca-

thartic waters, such as abilena, pluto, etc., can be reproduced by dissolving weighed quantities of the proper chemicals in water. Tablets for a number of these are on the market. Special mineral waters are often compounded, the various salts being used in such amounts as are dictated by the experience and taste of the manufacturer, and the solvent is distilled water. So prepared, the solutions are free from germs of any kind.

In Blending Liquors only pure distilled waters should be used.

In Hospitals, Sanitariums, etc., its medicinal properties in flushing the digestive system, with its soothing and healing effects for washing wounds and bathing, makes it invaluable.

In Hair-Dressing Parlors its adoption is imperative for establishing a continuous patronage. Hard water irritates the cuticle of the hands and face, makes the scalp dry, and destroys the lustre of the hair. Distilled water, being soft, is a natural beautifier. Its solvent actions cleanses the pores, invigorates the scalp and makes the skin soft and healthy.

In the home laundry the fitness of water for washing is determined by its softness. With hard water, much soap is wasted to decompose the salts in solution, while with distilled water it blends at once, removing dirt with little rubbing, and thus saves wear on clothes. As a commercial proposition this applies to the laundering of delicate and expensive fabrics.

The question of pure water supply for factory and office buildings is a matter of importance from the standpoint of employers' liability. The following is from the Chicago *Tribune:*

"Springfield, Ill., Feb. 5, 1913.—Employees of a plant operated under the Illinois workmen's compensation law are protected if made ill by drinking contaminated water supplied at the plant for the employees. This is the opinion of Secretary David Ross, of the State Bureau of Labor Statistics, in reply to a query from the United States Fidelity and Guarantee Company."

To secure factory and office business it is not enough to supply the stills and see that the gas supply is adequate, but attention to the matter of bottles, coolers and complete equipment is advisable. Frequent inspection to keep these in perfect condition will be found profitable.

In Ice Plants.—To obtain clean ice it is necessary to have water free from air, mineral salts or gross impurities. The factors in the purification of ice from infected water are: first, crystallization during freezing, which expels or destroys a very large proportion of the organisms; and second, and more important, the factor of time. Investigators agree that 90% of bacteria in ice die within one week and 99% to 99.8% die within three weeks after freezing. So natural ice has an advantage in longer storage, unless in the manufacture of artificial ice, distilled or sterilized water is used. For table use distilled water ice is to be preferred.

While there are few, if any, ice plants operated with gas fuel, there is no reason why industrial gas should not invade this field. Gas engines can be used to drive the ammonia machines and a gas-fired boiler connected with a multi-still for producing distilled water economically. Considerable waste heat can be recovered from the gas engine to assist in the production of steam for the distilling apparatus. Finally, the business of making and marketing pure ice can be carried on most profitably in connection with the sale of bottled distilled water. The demand for gas in such installations would be greater in the summer-time and would make a very desirable load.

The other familiar uses of distilled water, such as in soap factories, laundries, silk manufacturers, woolen manufacturers, etc., require it in such quantities as to place it out of the range af possibility with gas at ordinary rates. However, multiple-effect stills, cheap gas and favorable local conditions may, in certain cases, make this business obtainable.

Water Stills.

An early and erroneous notion of distilled water was that it was "condensed steam," which was designated "flat," and often contained a mixture of objectionable gases. Distilled water from a good still is a water from which all impurities—solid, gaseous, bacterial or chemical—have been eliminated, made palatable by being properly aerated.

A properly-designed apparatus performs distillation in these steps: First, driving off the gases from the raw water; second, adding heat to the water to transform it into steam; third, abstracting the heat to liquify it; and, fourth, aerating the distillate with pure air.

In the selectioon of a water still, the following points must be borne in mind:

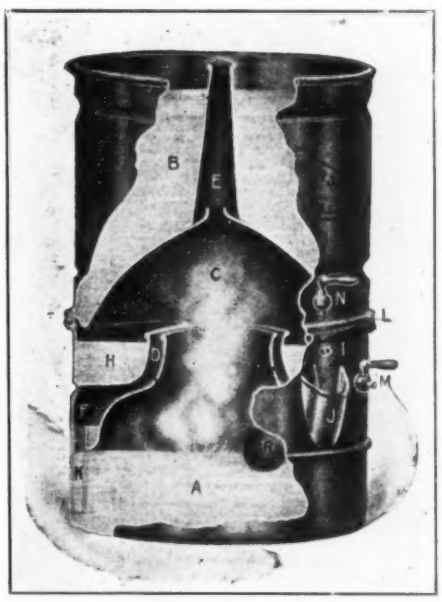
1. Purity of the water produced.
2. Potability of the water.
3. (a) Freedom from inorganic salts.
   (b) Freedom from impure gases originally held in solution.
   (c) For drinking water, must be aerated.
3. Durability of the still.
4. First cost.
5. Economy of operation.
6. Convenience of installation.
7. Ease with which still can be cleaned.
8. Amount of attention required.
9. Floor space required.
10. Appearance.
11. Capacity.

Distilled water should be stored in glass or tin-lined vessels. It acts quickly on iron in the presence of air, but does not affect nickel or aluminum. For these reasons the condenser tubes of a water still should be of aluminum or lined with tin. As a rule the containers are tin-lined copper tanks for storage, and glass bottles, ½-gallon, 1-gallon and 5-gallon sizes, for distribution. Large stone crocks and jars are also practical.

Some American Water Stills.

The following illustrate types of direct-fired stills of American manufacture. No attempt is made to criticize them, but they are submitted as descriptive of appliances now on the market.

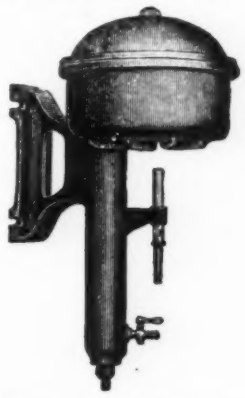
Ralston New Process Water Still.



The retort, sterilizing chamber and distillate reservoir are spun from copper sheet with interior surface tinned. It is intended to be heated on a stove or hot plate.

A and *B* are filled with water, *A* being replenished from *B* through *N* and *J*. Steam is generated in *C* and distilled into *H*. If still is forgotten, water in *H* overflows at *I* back into chamber *A*, which thus cannot boil dry. Ordinary capacity, 1 quart per hour.

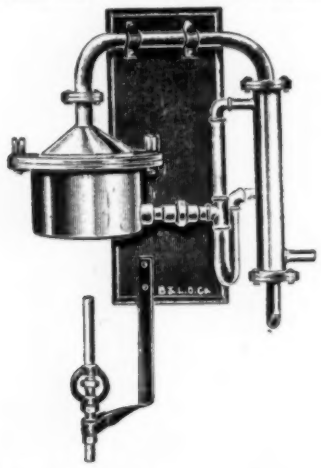
Stokes Automatic Water Still.



Substantial construction. Hood of still is porcelain lined to prevent corrosion, and condenser tube is tin lined. Can be taken down

for cleaning. Condenser tube extends to extreme top of the steam chamber, high above the water level. Capacities, ½ and 1 gallon per hour.

BOOTH AUTOMATIC WATER STILL.

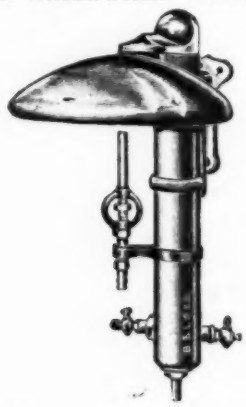


This consists of boiling chamber, condenser, burner, support and panel. The interior of kettle and cooling tube is lined with tin.

It can be cleaned by unscrewing the union and bolts of the pan.

Capacities furnished: ½, ¾ and 1 gallon per hour.

GREEN WATER STILL—AUTOMATIC.

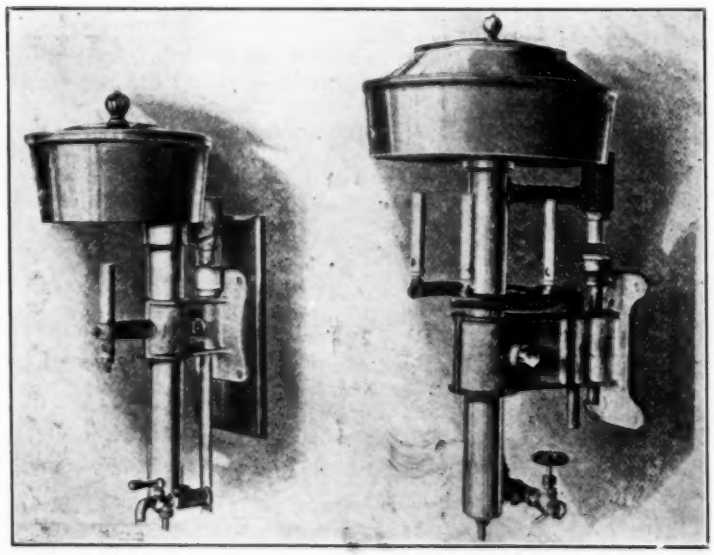


This still is attachable to wall by a bracket, and can be removed for cleaning.

Water is vaporized by a gas flame and condensed in a chilled tube.

Made of aluminized iron and polished aluminum; capacity, 1 gallon per hour.

ECLIPSE AUTOMATIC WATER STILL.



Style "R." Style "W."

Construction all brass, boiling chamber being cast; condenser tube tin-lined. All except the cast iron support is nickel-plated and highly polished. The support is finished in aluminum bronze.

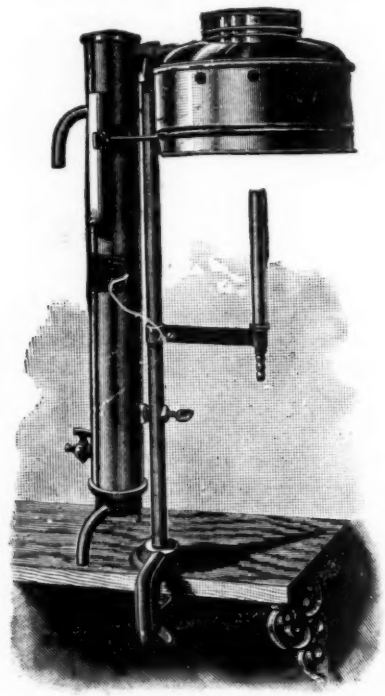
Height of burner is adjustable.

Easily cleaned, as by loosening one bolt and disconnecting the water supply the still can be taken from the wall and scrubbed. In addition it can be flushed periodically through an extra drain cock at the bottom of condenser.

Style "R," capacity, ½ gallon per hour.

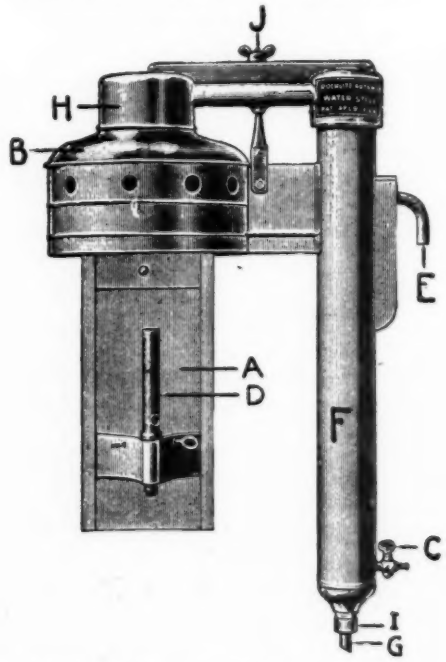
Style "W," capacities, 1, 1½ and 2 gallons per hour.

JAMES WATER STILL—AUTOMATIC.



This apparatus is made of copper and lined throughout with tin. It can be attached either to the wall or table as illustrated. Fuel, gas or gasoline. Capacity, ½ gallon per hour.

ROCHLITZ AUTOMATIC WATER STILL.

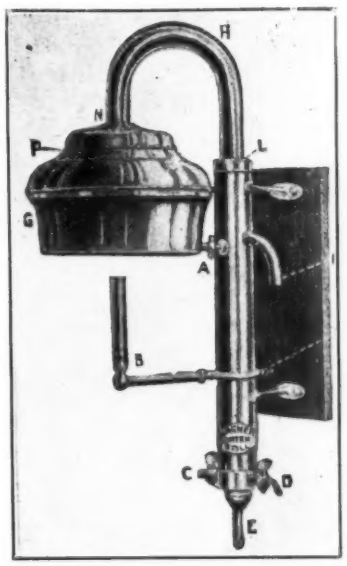


Material used is polished copper, tin lined, nickel finish. Water is supplied at *C* and distillate flows from condenser *F* at *G*. Fuel, gas or gasoline. Capacities, ½ and 1 gallon per hour.

WAGNER WATER STILL—AUTOMATIC.

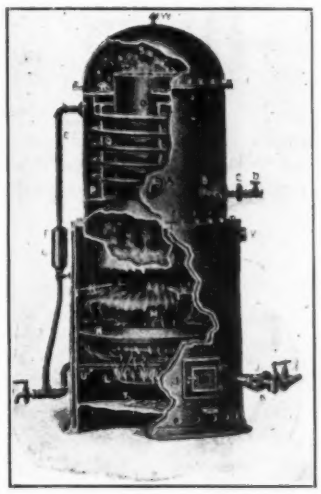
Constructed of copper and bronze, lined with tin and nickel plated outside.

Water connection is at *C* and enters condensing chamber at *A*. Overflow is at *F*. The high goose neck prevents any foreign matter passing over with the distillate. It is detachable at *P* and *L*,



and when condenser is disconnected at *A* the still can be easily cleaned. Capacities, ½ gallon per hour. Larger size, slightly different in construction, yields 2 gallons per hour.

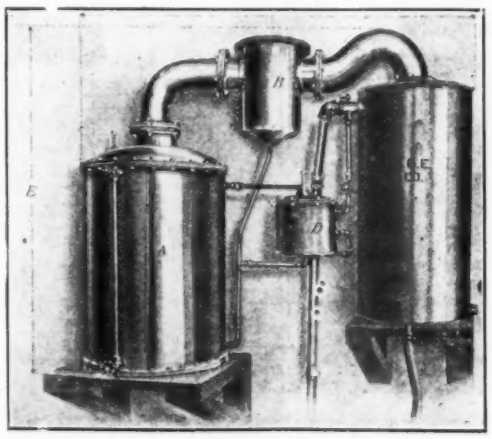
YOUNG'S IMPROVED AUTOMATIC WATER STILL.



Vapor chamber *O* and condenser *P* are cold rolled copper. Generator *M* and condenser dome *S* are hammered copper. All internal parts are coated with tin. Fittings, pipe, etc., are polished brass. Furnace jacket and deflectors *N* are galvanized steel. Capacity, 2 gallons per hour.

STEAM STILLS THAT CAN BE OPERATED BY A GAS-FIRED BOILER.

CONTINUOUS DISTILLED WATER APPARATUS OF THE AMERICAN COPPER AND BRASS WORKS.



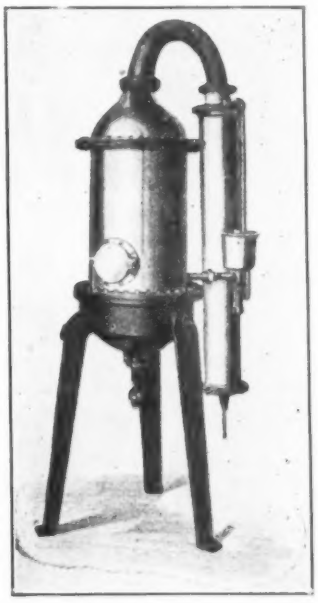
Condenser *C* has a copper water shell. All connections are of copper and the entire outfit is tinned inside.

Tank *D* receiving the hot water from overflow of *C* feeds it into the still, which is regulated by a valve maintaining a constant level.

The container *B* separates any foreign matter that may pass over with the steam and returns it to the steam chamber.

An outfit with a capacity of 50 to 60 gallons per hour requires a space 6 feet by 6 feet, projecting 3 feet from the wall.

ECLIPSE STILL.



Can be used with a McKee direct return Type-C boiler, making a trap unnecessary.

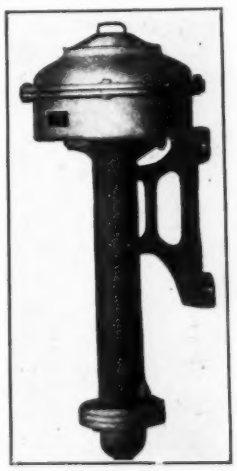
Construction is copper, inside heavily tinned.

The large clean-out valve on the boiling chamber.

Has no coils, as experience has shown that inorganic impurities stick to the coil and are very hard to remove.

The bottom is like an ordinary jacket kettle. The interior of the outer jacket to which steam from the boiler is supplied is tin lined, so that still can be used for double-effect work, in which case it should be connected with a boiler of water-leg type.

Capacities, 5, 8 and 15 gallons per hour.



STOKES' WATER STILL.

These stills are self-contained and require only the two connections for water and steam.

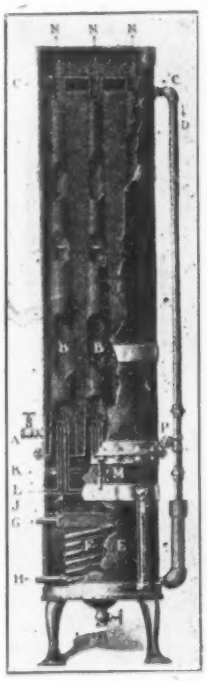
Operated by live steam, with a pressure of 20 pounds or over.

Still can be flushed for cleaning by opening a valve connecting with drain, or by removing the copper lid on the top, the interior can be scrubbed.

All exposed iron surfaces are tinned.

Capacities, 5, 10, 25 and 60 gallons per hour.

TRIPURE WATER STILL.



Water enters at *A*, surrounding condenser tubes *B*, which heat it to 190 degrees, at which temperature the gases are freed and escape through vents *C*. Water overflows through *D* and feeds into the evaporator *E*, where it is vaporized by means of steam coils *F*. The steam passing up through *J*, exerts a pull on the air flues *K*, drawing in air over hot surfaces through *L*. The air and steam being of the same temperature mix thoroughly and the resultant aerated vapor condenses on the cool surface of the tubes *B* and returns to chamber *M*.

Valves *O* and *P* should be opened to flush condenser evaporator shells after a day's operation.

Evaporator and condensing shells are boiler sheet. Steam coil in evaporator is copper tubing coated with tin. Condenser tubes and top, distillate chamber, vapor tubes and aerating flues are copper, tin lined.

Stills are finished in red enamel, with trimmings nickel-plated and polished.

Capacities, 125, 250, 500, 750, 1,200, 1,800, 2,500 and 5,000 gallons per 24 hours.

(Continued on page 410.)

THE AMERICAN GAS LIGHT JOURNAL

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E. P. CALLENDER, President.
A. M. CALLENDER, Vice-President and Treasurer.
CHARLES H. WADELTON, Secretary and Manager.

SANFORD K. CAMPBELL, Editor.

NEW YORK, MONDAY, JUNE 28, 1915.

Southern Gas Association to President Wilson.

The Southern Gas Association, while in session at Isle of Pines, adopted a resolution endorsing the action of our President, and sent him the following message:

Isle of Palms, S. C., June 4, 1914.
To Woodrow Wilson, President of the United States,
Washington, D. C.:

The Southern Gas Association, in convention assembled here, this afternoon voted unanimously in favor of expressing to you their entire confidence in you, and hearty approval of your course in the present crisis of the Nation.

By direction of the Association the Secretary is notifying you of this action.

Southern Gas Association,
E. D. Brewer, Secretary.

The reply by letter was this:

The White House, Washington, June 5, 1915.

My Dear Sir: The President deeply appreciates the friendly spirit of the message you sent him in the name of the Southern Gas Association, and he asks me to convey to you and to all those concerned an expression of his warmest thanks. Such generous words of confidence and approbation are very gratifying and heartening to the President.

Sincerely yours,
(Signed), J. P. Tumulty,
Secretary to the President.

Mr. Ed. Brewer, Secretary Southern Gas Association, Isle of Palms, South Carolina.

Courtesy Counts.

In line with the article on the Complaint Man on the front page of this issue of the Journal is the following from a recent editorial in the "Chicago Tribune," applicable to every company supplying service to the public:

"'Courtesy meetings', it appears, are to be organized by one of the great railroad systems of the country. It is felt that rudeness and boorishness on the part of conductors, brakemen, porters, clerks, and other employees of a carrier are neither essential nor unavoidable, and that neither strenuosity or efficiency require the sacrifice of good manners.

"If 'safety first' is a good slogan, 'courtesy second' is just as good. Time was in this country when busy and energetic men assumed tacitly that in trade and commerce manners were of no consequence. So long as the goods were 'delivered' what did mere words matter? Why waste precious moments—which any statistician could multiply into staggering periods of time and enormous losses of money—on "Please' and 'Thank you'? Why not leave all such empty and useless formalities to the absurdly ceremonious Latins, and show the world that business can be transacted in a downright and swift manner?

"These notions have been relegated to the limbo of crude ignorance. There has been a veritable rediscovery of manners in business. Efficiency is being separated from brusque discourtesy. Statisticans to the contrary notwithstanding, a billion 'Thank yous' will not 'waste' a single second. Manners may take time, but they bring money instead of taking it. Politeness and affability pay."

Of Great Importance.

The question of the value of public utility franchises in determining rates for service is of such great importance to all purveyors that the gas industry must applaud the determination of the Public Service Gas Company to carry to the highest courts the last decision in the Paterson, N. J., 90-cent gas suit. In this decision the Court of Errors and Appeals reversed its former findings and affirmed the decision of the Supreme Court upholding the order of the Board of Public Utility Commissioners for a 90-cent rate in what is known as the Passaic division.

The principle question at issue is the value to be put upon the franchises of the company, and President McCarter says:

"A writ of error will be promptly taken by the company to carry the case to the Supreme Court of the United States."

Society of Gas Engineering Outing.

The annual meeting and gambol of the Society of Gas Engineering of New York city, was on Thursday afternoon last and, as usual, at the Astoria works of the Consolidated Gas Company. About 300 members and guests, conveyed in autos and motor busses, were at the works by 4 P.M., and kept busy until about 8:30. On arriving, everyone checked his hat and got in exchange a canvas "lid" with either a blue or a red band which designated his party affiliation for the afternoon. The first thing you saw was the African Dip, where all day long they threw base balls, at 3 for 25 cents, in an endeavor to drop a colored brother into a tank of water. The receipts from this sport netted $106.25 for an Engineering Society Fund for war sufferers. The other sports altogether netted nothing but perspiration and an appetite, and these also were donated to a good cause. For a while there was the base ball game between all the Reds and Blues that would, and the fielders were so thick that it didn't count a "strike" if you failed to knock down ten of them. The "Aerial Maneuvers" was a competition flight of Japanese dirigibles filled with coal gas, and was won by the Blues when all were untangled.

The initiation of members admitted since the last Outing was a strenuous affair for them. Dressed in overalls and jumpers they were marched around the diamond; made to do the boa-constrictor; crawl a race on knees and elbows, and run another without shoes and then find and replace their own. This was not so easy when some had been purloined and all were tied together. Most strenuous of all was the "Tug of War," in which about 75 on a side kicked up a big dust trying to pull Woods or Morris off the "spot." Here again the Blues had it, the only game in which they failed to best the Reds being at the eats and drinks. The dinner was served on the lawn near the boiler house, and soft clams and steak with beer and beer and ice cream and smokes were won by all, the Coon Band entertaining with songs and music while we ate. President Woods spoke a few words of welcome; and Mr. Cortelyou spoke entertainingly of the afternoon's happenings and New York City's new official flag and its significance. That was all, and just enough to make the day a great success.

SPECIAL ENGLISH CORRESPONDENCE.

Monthly Letter From Norton H. Humphrys, Salisbury, England.

IS THE INSTITUTION OF GAS ENGINEERS A FAILURE?—READJUSTMENT OF SELLING PRICES.

When a question of the character that heads this letter is propounded in the columns of the *Journal of Gas Lighting* and decisively answered in the affirmative, there is indication of a position that calls for serious consideration. For all practical purposes, the institution has existed for over 50 years, as although the title has been changed more than once, no broad alteration to the methods of procedure have been made. And over the whole of that period there has been in existence, both amongst the members and outside, a feeling that the Institution is not what it should be, a real, live, representation of the interests of Gas Engineers and Managers, if not of the gas industry as a whole, strong enough and capable enough to deal effectively with matters concerning the general welfare, which would include the work now being done by several different organizations that have been forced into existence by the necessities of the times, and as such are active competitors for the position above indicated. I refer to the District Associations, the Junior Gas Associations, the British Gas Association, the Society of British Gas Industries, the Sulphate of Ammonia Committee, the London Coke Sales Committee, not to mention the public spirit exhibited by the London gas companies and other large undertakings. Some of these entrench upon the extremely circumscribed area of mutual improvement, which the Institution has always claimed as its own. A permanent indication of this feeling is the fact that the Institution, as evidenced by the list of members, has never at any time appealed to the sympathies of even 50% of the gas works managers within its district. But apart from this, there are periodical eruptions, like the spots on the sun, which can usually be traced to some current exciting causes that serve to emphasize the need of a strong united representation of the profession.

In the first place, the Council decided that the meeting this year should be only *pro forma*, as, on account of the interrupted railway traffic, labor difficulties, etc., an adequate attendance was doubtful. This meeting, by the way, was held on the first instant, and, notwithstanding the bareness of the program, there was a fair attendance. The other bodies instanced have held successful gatherings, notwithstanding similar disadvantages; the Southern District Association at Cambridge only a few days ago. It is to some extent a confession of weakness that at the present time, when so many new conditions are arising, the Council did not feel equal to the promotion of a larger program. This limpness is not evident in the working of kindred professional institutions. A few weeks ago a coal conference was held in London, and attended by quite 500 members of the institution at a short notice, which was a proof that, provided an adequate program, there need be no fear of empty seats. The institution, having no home of its own, was indebted on that occasion to the hospitality of a much younger branch of engineering—the electricians—for the use of a commodious and elegant hall for the purpose of the congress. And this aroused an old sore. Why, it is asked, when other industries provide themselves with commodious premises for meetings and for the convenience of members, cannot the Institution of Gas Engineers meet under its own vine and fig tree? Lastly, the profession has been blown upon by unjust treatment of certain members by advertisements offering inadequate remuneration, and by undue interference of committeemen possessed of more confidence than competence.

The reasons given for the conclusion set forth at the commencement are that the Institution has in no way improved the position of its members, either from an educational, financial, or social point of view; that after 50 years of existence it has failed to provide a central building or meeting-place, and that it has failed to open its doors to the best brains of the associated industries. These points are emphasized by the work done by kindred professional associations for the benefit of their members.

The meeting of the Institution of Gas Engineers was probably the shortest on record, the whole proceedings being included within a period of 3 hours. But the value of the meeting is not necessarily represented by the time limit. The fact that a comparatively large amount of business was conducted, is due to the tactful management of the President, Mr. John Bond, of Southport, who gave a very substantial proof of interest in the prosperity of the Institution by handing to the secretary a cheque for one hundred guineas to be placed to the credit of the building fund. The awards of medals for papers submitted to the 1914 meeting were remarkable for the fact that they mostly fell outside the list of ordinary members. Mr. Geo. T. Purvis, a member of one of the Junior Gas Managers' Associations, secured the London Gold Medal, for his paper on the Application of Coke Oven Carbonizing and direct Ammonia Recovery to Gas Works' Requirements. A paper by Mr. Jacques Abady, who is not unknown to American readers, secured the Institution Gold Medal. Mr. John West secured the Silver Medal for his contribution entitled "Lime and Sulphate of Ammonia as Fertilizers." It is evident that notwithstanding stoking machinery and vertical retorts, Mr. West finds some leisure for other pursuits. And the Bronze Medal went to a Norwegian, Mr. B. K. Schieldrop, who described some special features in gas works' practice from Norway. The president delivered an address which disappointed no one in any respect other than its brevity. Evidently the scissors had been mercilessly applied to suit the exigencies of the occasion, and general disappointment was expressed at not hearing a deliverence upon certain subjects in respect to which Mr. Bond is entitled to rank as a specialist. It is interesting to notice in passing that the Government have recognized his ability by awarding him a position in connection with the work of the high-explosives committee. The report of the council, as usual, was divided into a large number of headings. The absence of many members of committees on active military service has interfered with progress in committee work, but the refractory materials research and the ventilation research committees were able to submit reports. But as these were not printed in advance they could only be accepted as unexamined goods by the meeting. Researches on ventilation, as may be imagined, open up a debatable subject. A joint committee of the Institution and of the Society of Gas Industries is now engaged in investigating the various conditions affecting the life of gas meters, and the results of this enquiry will be useful and interesting. Endeavors to assist the market for tar, which has been greatly prejudiced by the slackened demand for pitch and the efforts of the Government to prevent the use of crude tar for ashphalt or road spraying, proved unsuccessful, with the result that tar producers receive the barren comfort of being recommended to make their own arrangements for the disposal of tar. There will be serious difficulty with regard to this matter during the coming winter amongst gas works of the smaller class who as a rule have not a few hundred pounds at hand to invest in dehydrating plant, or any surplus labor, under present conditions, to work such an apparatus. The question of coal supplies to gas works under the novel conditions of freightage, either by rail or sea coast, created by the war, has also received the attention of the council. A remarkable feature of a special resolution on coal supplies, which was submitted to the meeting after tbe report had been accepted, was that the proposer, Mr. Edward Allen, took up the curious and ambiguous position that gas companies themselves were largely responsible for coal difficulties, which, if correct, completely cuts the ground from under their feet in regard to any appeal for Government or other outside assistance. The discussions throughout were marked with a point and animation that is sometimes remarkable for its absence in connection with the meetings of the Institution. Mr. John Young, of Hull, was appointed president for the ensuing year, and it was decided that the next meeting should be held in London. If the war should unfortunately continue so long the council may, nevertheless, with the experience of 1915 before them, be a little more ambitious in the matter of the programme for the next meeting.

Managers of gas works at present are faced with the necessity for readjustment in the selling prices of gas, brought about by the advance in prices, ranging from 25% to 50%—not of one or two items only, but of almost any commodity or article that figures in the expenditure. Coal, labor, metals of all classes, fire-clay goods, glass, mantles, are all concerned, partly on account of the laws of supply and demand, but very largely by the influence of rings and combinations who put profits before patriotism. Most companies are either partially or entirely postponing the supply of meters, stoves, or fittings on hire or under slot agreements. Even necessary extension of mains have to stand over. In respect to goods that must be ordered, there is first a delay at the manufacturer's or producer's works, and then a second delay on the part of the railway companies. Added to this, in many instances the scarcity

of labor has rendered the services of the out-door staff necessary at the gas works, in order to keep up the manufacture and purification of the gas. We have had to experience coal and labor troubles in the past, but frequently these have been attended with compensating causes, such as the increased price of residuals. But now there is very little prospect of assistance in this direction. Prices are already as high as the market will stand. Gas, therefore, has to bear the whole brunt, and while some have preferred to make a partial advance, say 3d. to 4d. per 1,000 cubic feet, and depend upon the balance of undivided profit to make up the deficit, others have determined that the present position does not warrant the depletion of reserves, and have thrown the whole burden on the gas consumer by means of an advance of 10d., or even 1s., at the same time pointing out that this is a temporary expedient necessitated by the exigencies of war. No reasonable consumer, having common knowledge as to the advanced prices in general, can complain of a proportionate advance in the price of gas. Those who prefer the first-named course may find themselves at a considerable disadvantage later. War, famine, and pestilence have run in harness from the commencement of the world. Modern science has ameliorated the extreme condition of the second and third contingencies, but it cannot avoid a time of depressed trade and high prices. The whole of our legislative enactments are based on the rule that the selling price should equal the manufacturing cost *plus* dividend, to the exclusion of surplus profits. If this principle is sound, then there is no reason why the sellers of gas should not hold that it applies both ways, not only to surplus only, but also to deficit. If the suppliers are to accept the responsibility for deficit, then there must be a generous margin to cover risk.

Safety Reminders.

The United Gas Improvement Company in its accident prevention campaign is using a series of pay-roll envelope cards designed to make the men think "safety." One of the cards is put in each pay envelope, the series being added to from time to time, or the admonitions repeated.

Here are what some of the cards bear:

"Are you a safety man? Think it over."
"Do your share towards cutting down the number of accidents."
"Do you know how important it is to be careful? Stop and think."
"Fall in line with the accident preventors. Be careful."
"To avoid danger follow the safe course."
"Hit the safety trail and stick to it."
"Better wear goggles than lose an eye. Be careful."
"Don't be afraid of taking too much care. Help yourself."
"Think about safety to-day, to-morrow and all the time."
"Acquire the safety habit. It will help you."
"Watch for danger points and report them. Don't depend upon others."

Mr. Douglas's latest list of accidents that could have been prevented is this:

Meter repairer was soldering a meter, and the *solder* came in contact with a drop of *water*, causing it to "pop" into his *eye*. As moisture is likely to be present in meter-seams, *goggles* are suggested while doing this kind of work.

Man was holding bar while another was striking with *sledge*. He *missed* the *bar* and struck the employee holding the bar over the eye. Had *tongs* been used to hold the bar, the accident would not have occurred.

Orderman had a *stop-key insecurely tied* on his bicycle. It gradually worked loose and came in contact with the front wheel of the bicycle, *throwing* the *rider* to the street and injuring him. A fall of this kind, particularly in the midst of busy traffic, might be a serious matter, and care should be taken to *fasten* stop-keys *securely* if carried on bicycles or motorcycles.

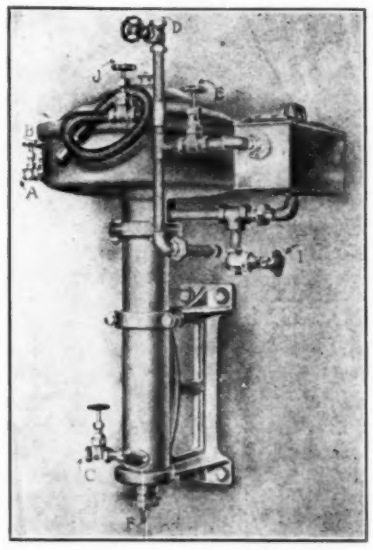
A *barrel-hoop*, containing a *projecting nail*, was lying on the floor of a shop shed. A boilermaker's helper stepped on it, and his *foot* was *punctured*. Barrel-hoops have caused serious injuries when stepped upon and caused to fly up or trip persons, and they are more dangerous when the nail hazard is added.

A main ditch was *shored* properly *except* at *one point*. That point *caved* and an employee was thrown into the ditch and injured. If the trench had been completely shored, this accident would have been avoided.

(*Continued from page 407.*)

The Distillation of Water.

JEWEL WATER STILL.



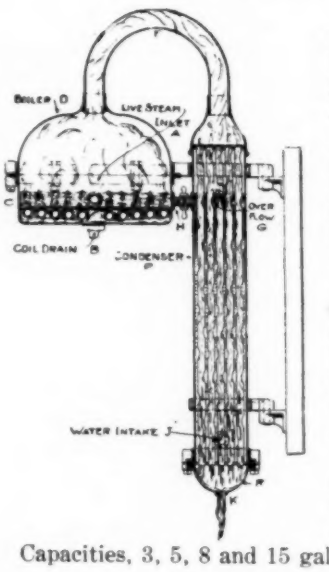
Body parts are iron; evaporating coil, ball-float levelling device and condensing tube are copper, coated with tin.

Steam connection ¼ inch; drain pipe, ½ inch.

Space, 34 inches high by 24 inches wide. Weight, 125 pounds.

Capacities, 3 gallons per hour and up.

WAGNER WATER STILL.



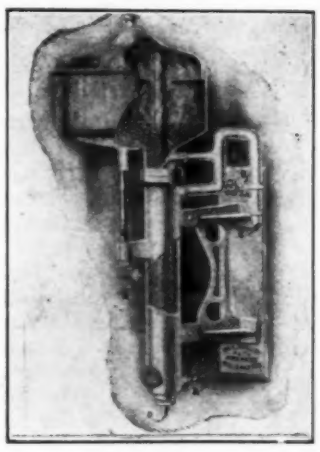
Made entirely throughtout of highly polished bronze, copper and brass. All surfaces exposed to the generated steam or distilled water are tinned.

The still is operated by means of tinned copper steam coils within the chamber *D*. Water enters through *J* and when it reaches inlet *H*, supplies chamber *D* to height of overflow *G*. As the water evaporates more is supplied automatically, while the steam, passing through *F* is condensed and delivered cold at *K*. The supplied steam enters at *A*, circulates through the coils in chamber *D* and comes out at *B*.

Bottom *C* can be removed by means of two detachable pins. The valve *I* is used for draining condenser and boiler.

Capacities, 3, 5, 8 and 15 gallons per hour.

JEWEL WATER STILL—AUTOMATIC.

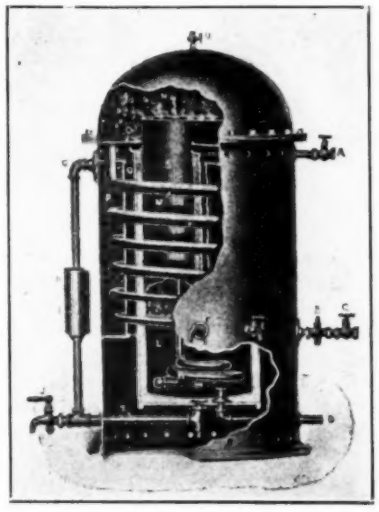


Main body parts are iron castings, boiling chamber enameled inside and finished outside with aluminum bronze paint. Support

and condenser finished in aluminum bronze. The water connection is made at *A* and drain at *C*. The blowoff of the boiling chamber is at *E*. Capacities, ½, 1½ and 2 gallons per hour.

Can be furnished with spun copper boiling chamber, tinned inside and nickel-plated outside.

YOUNG'S WATER STILL.



Raw water enters condenser tank *P* at *B-C* and overflows at *G* into *H*, having become heated to about 200 degrees F. From *H* it is fed automatically into the generator *L*, the waste pipe *I* taking care of the surplus. The steam condensed in dome *N* immediately is carried through the condenser coil *Q* to the outlet *F*.

Construction is of copper, all internal parts being tinned.

Capacities, 1½, 3, 5, 10, 15, 20 and 25 gallons per hour.

In the three smallest sizes a steam drum is used in place of steam coils *K*.

A GAS-FIRED BOILER AS A WATER STILL.

A suitable condenser attached to a gas boiler makes a practical water still. A boiler for this purpose should be preferably of the water-leg type, and provided with large cleaning holes. It should be cleaned frequently, but boiler compound must not be used. There is, however, no objection to the use of granulated zinc or zinc rods or plates. It is also necessary that the boiler be operated at low pressure and provided with a low pressure constant water level regulator.

Installations of this kind have been made where distilled water of great purity was required and resulted in entire satisfaction.

This method of producing distilled water is preferable to a gas boiler connected with a steam still, unless there are other uses for the steam from the boiler, or unless multiple-effect distillation is to be carried on.

The Gas Company from the Consumer's Point of View.

[Prepared for the 11th Meeting I. D. G. A. by J. H. INGWERSEN, President Peoples Trust and Savings Bank, Clinton, Ia.]

The subject assigned me is rather difficult of discussion in a city favored in the possession of a manager of its Gas Utility who has the capacity, tact and energy of Tom Crawford. However, Clinton has not always been so situated, and in the past we have had men in charge of the gas plant who did not measure above the standard of most of us, and, therefore, became obsessed with the idea that the public was not entitled to serious consideration when it came to a dispute involving the gas company on one side and the consumer on the other side of the controversy.

The relation between the gas company and the consumer is that of buyer and seller, and differs only in two respects from the relation between the grocer and his customer. In the first place, the gas company must of necessity deliver its product to the place of consumption, for in the very nature of things it cannot wrap the goods in packages and hand them to the customer at its place of business. Then again, the sale of gas is necessarily a monopoly, whereas the grocer has competition on every hand. Competition is the life of trade, but very few people take so constricted a view of the question as to advocate competition in the sale and distribution of gas and electricity. The same result is attained through the agency of regulation, and in this day and age very few shareholders in public utilities corporations are so selfish as to argue against regulation. If the human race had reached that stage of perfection when men do not need the restraining arm of the law to make them strictly observe the golden rule regulation by law might not be necessary, but so long as there is a vestige of selfishness in the human breast, big business, including public utilities corporations, must be regulated.

The consumer requires three things of public service corporations supplying him with light, water and heat, namely: service, quality and price. The service must be up to the minute; the quality is expected to be of the highest grade; and the price the public is willing to pay is measured chiefly by the character of the service and the quality of the article furnished. It must be admitted that the consumer is not always reasonable in his demands. He is inclined to favor a price disproportionate to the service rendered and the quality furnished, but, on the whole, public opinion does not shoot very wide of the mark, and in the long run, it will be found that the great majority of the consumers are not unreasonable.

We all know that every community is full of people more capable of managing our banks, gas companies, baseball teams and other enterprises, both public and private, than the men selected by the shareholders because they are supposed to possess qualities peculiarly fitting them for the service they are expected to render. The members of our City Councils are rarely men of wide business training, but in spite of that handicap, they are expected to be qualified to initiate legislation regulating the management of corporations employing managers of wide experience and exceptional business capacity. This condition makes it necessary for the manager of a public utility to be a diplomat.

Much of the anti-corporation legislation the country has been afflicted with is directly attributable to lack of tact on the part of men charged with the management of our corporations. The man at the head should set a standard for courtesy and fairness to be emulated by all employees serving under him. Every complaint, no matter how trivial, merits consideration, and if not well founded, the complainant can usually be sent away in a happy frame of mind, if the old saying, that "Molasses will catch more flies than vinegar," is not lost sight of.

Many specimens of ill-advised legislation are the direct result of sentiment created by crusty officials and employees of our great corporations. Tact and diplomacy will do more than any other agency in satisfying the public as to the price paid for the service rendered by the lighting company. The price paid must he adequate, not only to cover the service and quality demanded by the public, but to make reasonable provision for replacement of plant and equipment, extensions of service to meet the demands of a growing commnnity, and a fair return on the capital invested.

The investment in a public service corporation, unlike that in most other lines of business, may be said to be always incomplete. The population of the United States is increasing at the rate of 1,000,000 a year, or 1% per annum. The bulk of the growth is in cities ranging in population from 10,000 up, and it follows that public utility corporations located in growing cities and towns are constantly called upon to extend their sphere of operations to meet the requirements of residents of additions to the city, so that, like woman's work, the work of the corporation serving the public with light, water, heat, and transportation, "is never done."

The people are disposed to be fair and to recognize the needs of the corporations. The great majority of the consumers are perfectly willing to pay a sufficient price for the service, to enable the corporation to do what is expected of it, and to enable it to pay its shareholders a fair return on their investment. There are, of course, exceptions to the general rule, but they are rare. For instance, I am reminded of a lumberman who, in a period covering less than a generation, rose from office boy with no means or prospective inheritance to multimillionaire manufacturer, who had the nerve to publicly advocate that 5% per annum is sufficient return on an investment in railroad stocks, and to suggest that the law should so regulate rates as to make a larger return impossible. When asked if he favored a law reducing the price of lumber to a point that would limit the return on lumber manufacturing stocks to 5%, he declined to answer.

Mention is made of this to prove that we are all prone to think that the business we are engaged in should not be disturbed by legislation or otherwise, but that the other fellow may be soaked for all he can stand. In spite of these shortcomings, to which nearly all of us are subject, it may be safely asserted that on the whole the consuming public is supposed to meet the utility corporations half way, and to give them fair treatment if the management is efficient and courteous, actively interested in all movements for the permanent upbuilding of the community, and does not shirk a responsibility that falls to its lot by taking advantage of legal technicalities.

It has become customary of late years for public service corporations to take an active part in Commercial Club work. This is as it should be, for the Public Service Corporation is directly interested in any movement that has for its purpose the promotion of the growth of the community, and the active participation of its

officers in civic affairs tends to popularize it with the public. As a corporation it should refrain from participation in politics. The general public, through the machinations of professional politicians, has developed a serious misconception as to the part taken by public service corporations in political affairs. There have been abuses in this respect in the past, but of late years the people have had mighty little cause for complaint along that line. As individuals, the officers of public service corporations would be derelict in their duty to the State if they failed to take an active part in politics. In fact our failure to elect the right type of men to represent us in our law making bodies, is wholly the fault of the people, for the average business man not only declines to permit the use of his name for political preference, but in the case of the great majority of the voters, he even refuses to take the trouble to express his preference at the primaries.

To summarize the question from the standpoint of the consumer, we arrive at the following conclusions:

First.—The gas company must furnish adequate service under all reasonable conditions.

Second.—The quality of the article furnished should always be a little above, rather than below legal requirements.

Third.—The price should be as low as the service and quality permit, having due reference to plant depreciation, extension requirements, and return to the shareholders on their investment.

Fourth.—The management should make tact a cardinal principle of its relation with the public.

Fifth.—Its officers and employees should be uniformly courteous, no matter how great the provocation.

Sixth.—The management should take an active part in the work of all organizations created for the purpose of developing the growth and prosperity of the community.

Seventh.—The corporation itself should refrain absolutely from participation in politics, but the officers and employees, in their individual capacities, should do their full duties as citizens and actively participate in primaries and things political.

Any public service corporation that hews close to these lines will experience very little difficulty in conducting its business to the complete satisfaction of its patrons; and it, of course, follows, that a satisfied customer means profit for the shareholders, for any business that is out of harmony with its patrons, cannot be prosperous for any great length of time.

Refrigeration By Gas.

[From Paper by H. M. SOPER, Written for the Iowa District Gas Association.]

During late years sanitation has occupied the attention of thinking people, and when the medical fraternity show us that food, especially milk, butter, and other easily perishable provisions, should be kept in a cold storage temperature, i. e., 33° or 34°, and we note by the thermometer in our ice-boxes that we have a temperature of from 40° to 50°, we wonder if ice is any good at all except to cool our drinking water. Examination has shown, also, that melting ice not only cannot give the necessary low temperature, but does give a high humidity to the air in the box, causing everything to sweat or collect moisture on the outside, and porous substances become soggy.

Thus we are driven to the conclusion that to get refrigeration that really gives us a chance to combat bacteria in our food supply, we must get a small plant that approaches the cold storage proposition, as it cannot be done as long as we use ice alone.

There are a number of compounds used as refrigerants, among them air, carbon dioxide, sulphur dioxide, ether and ammonia, the principle involved being their comparatively easy conversion from a liquid to a gaseous state and back to a liquid again in a continuous cycle. Passing over any discussion as to the relative merits of these, we will consider only ammonia.

Ammonia, a compound of nitrogen and hydrogen, is at ordinary temperatures a colorless non-poisonous gas with an odor that scarcely requires description to gas men. The liquifying pressure varies with the temperature; at 40° F. it requires a pressue of 5 atmospheres or about 75 pounds, whereas approximately 12 atmospheres or 185 pounds are necessary at 90°. It is extremely soluble in water, 1 volume at 32° being capable of absorbing nearly 1200 volumes; at 40° over 1,000 volumes, and at 90° over 500 volumes of the gas.

There are many varieties of machines using ammonia, both steam and electrically operated, classified as of the compression or absorption type; but both are compression machines, one dry and the other wet, the compression in both being by a cylinder and piston.

The machine best adapted for small domestic use is a modified absorption type, discarding the mechanical compressor and obtaining the necessary compression by means of heat generated by gas. The only other necessity for the operation of the machine is water.

A complete machine comprises a generator, rectifier, condenser, absorber and gas burner; and these can be so arranged that the whole appliance occupies no more space than a gas range, and can be placed in the basement out of the way as it requires practically no attention after once started and regulated to the needs of the ice box.

The reactions taking place inside the system, which includes machine and ice box, are simple and easily understood. From a strong aqueous ammoniacal solution, the heat of a gas flame drives off ammonia gas, which, cooled and condensed to a liquid, represents potential refrigerating energy. This liquid, expanded in the ice box, is capable of absorbing an enormous amount of heat in changing from liquid to a gas, and carries the heat from the ice box to the machine, where the ammonia gas is re-absorbed by the water from which it was originally driven, and the heat is carried away by the cooling water surrounding the absorber. By absorption of the ammonia gas, the solution becomes strong again, and the cycle is repeated.

The superiority of this method of obtaining refrigeration over melting ice is easily seen. With ice we get a temperature not lower than 40°, which only partially chills food, and as the ice supply decreases in size, the temperature rises, and all the moisture arising from the melting of the ice, and that which comes from the warm foods placed in the box, collects on the sides and top of the box and drips upon the food. With ammonia coils, or a brine tank cooled by the coils, no moisture is given off except that from warm foods or when the box is opened, and this is collected as frost on the coils or on the surfaces of the brine tank, because these are all far below the freezing point and often below zero. The temperature of the box will show an average of 28° or 30° and can be made even less, which arrests all bacterial growth and preserves food in perfect condition.

This has been demonstrated by a machine of the intermittent type that required about one hour for the generating period, i. e., driving off the ammonia as a gas and collecting and condensing it to a liquid; and several hours for the absorbing period, when the liquid ammonia was expanded in the ice box and re-absorbed in the machine. This meant a great loss of efficiency because the machine was doing refrigerator work only part of the time, allowing the ice box to become warmer in the intervals when generating another charge. It is evident that to get continuous refrigeration this idle period must be eliminated, and my latest information is that this has been accomplished.

I am also informed that a company that manufactures such appliances have sixty or seventy machines in operation in one large city. This particular machine is a complex structure of automatic parts, consisting of numerous check valves, levers, gauges, pressure springs, thermostat and other devices, besides the essential parts—the generator, condenser, rectifier and gas burner. Machines with so many automatic parts are all right when they work, but when they do not they require the services of a skilled mechanic.

The generator of this machine is charged with a strong solution of ammonia made by adding a pound of anhydrous ammonia to each pint of water. The heat of the gas flame expels the ammonia from its solution, which passes as a gas up the rectifier tubes surrounded by water that act as coolers and preliminary condensers, removing the water vapor so the ammonia as it passes through a check valve and into the condenser is practically dry. The condenser, also surrounded by water, collects the ammonia gas, which gradually builds up a pressure sufficient to liquify itself. When this point is reached, the machine reverses by means of a thermostat tripping a lever to release a float valve, which automatically shuts off the gas down to a pilot light, and starts water flowing over the generating drum to cool it. There is a liquid shut-off valve connected to the condenser but held closed by the pressure in the hot generator, but as soon as this begins to cool, the differential in pressure between the generator and condenser opens this valve, and the liquid ammonia flows out to the expansion valve, which is simply a disk with a needle opening. Beyond this is a larger diameter pipe composing the coil, surrounded by a brine solution capable of being brought to temperatures below zero without freezing. The function of the brine tank is to condense all moisture and to absorb heat, and then to give up this heat to the expanded ammonia as it comes through the coils. This

slightly warmed ammonia, now a gas, passes back to the machine through more check valves, and is re-absorbed in the generator. As the liquid ammonia leaves the condenser, the pressure drops until the differential between the generator and condenser is on the generator side of the liquid shut-off valve, which closes. Then, a pressure spring connected to the condenser, by relaxing, allows the gas to be again turned on after shutting off the water flowing over the generator, when the cycle of operations is repeated.

The foregoing description makes the operation appear complicated, but in reality it is very simple, as the machines will run without attention for several months and keep the ice-box temperature near the 30° mark, except in extremely hot weather, when the idle hour allows the box to warm up slightly. One of these machines, tried out in Mobile, where during May the cooling water gets up to 72°, kept an ice-box at an average of 33°, and in June and July, with water at 84°, the box temperature was 35°. This shows the possibilities of a small machine for the household; and for the gas companies it means a continuous night and day pull during the summer.

Very few really great devices were perfected by one man; so why should we wait until somebody can assure us that he has a machine which will run forever without attention? Many of you remember the trials and tribulations of your companies some years ago with the automatic water heater; yet you gave the manufacturers your moral and financial support by installing these heaters, thus enabling them to continue their experiments to correct the faults of the appliance. Now that the iceless refrigerating machine on a small scale is an accomplished fact, it would seem to be your duty to help, knowing that it will create another source of revenue by increase of consumption of gas, and at the same time you can say that you helped confer another blessing on the community.

War-Born Processes.

The extent to which the war has pushed scientiffc effort in Germany is emphasized in a communication, from the director of a large German company in the "Engineering and Mining Journal." The main points are these:

Means have been found to manufacture rifle cartridges and the fuse heads of grenades without copper or brass. Soft iron with a small copper content, and zinc treated by a special process, replace to a large extent copper and brass.

Realizing that the prolongation of the war may result in a shortage in aluminum, the chief raw material for which comes from northern France, a Heidelberg chemist has discovered an apparently rational process for recovering aluminum oxide from ordinary clay containing anywhere about 30% Al_2O_3. The process also extracts the alkalis, particularly potash. Two aluminum factories will soon be completed that will make Germany independent as to this metal.

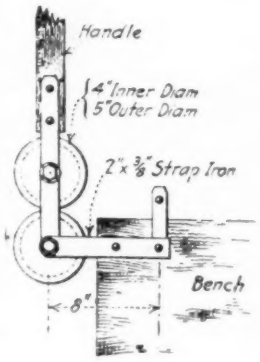
Attention is being given to the substitution of magnesium for aluminum. It has been shown that magnesium, and a magnesium-aluminum alloy, may possibly replace copper as an electrical conductor. A large magnesium plant is being erected to utilize the magnesium chloride, a by-product of the potash industry hitherto considered worthless.

England having cut off the supply of gasoline and petroleum, two synthetic processes have been worked out for producing motor spirit. A process for making gasoline from mineral oils has been simplified and a large plant will soon be operating. A second process has been invented, based on the assumption that if hydrogen be added to unsaturated hydrocarbons, gasoline will be formed as in nature. It is proposed to add hydrogen to unsaturated hydrocarbons from bituminous coal and make gasoline, a plant for doing this is expected to be in operation soon.

To offset the shutting off of the supply of saltpeter and thereby the manufacture of explosives, large works are being erected to convert the nitrogen of the air into ammonia and this into nitric acid by the contact process.

Sulphuric acid is being made from ammonium carbonate by the Haber process, and Germany's large deposits of magnesium sulphates are to be similarly used. Similarly by decomposing magnesium or barium sulphates with coal the sulphide is formed, which is further decomposed by carbonic acid into barium carbonate and hydrogen sulphide, which by suitable combustion is transformed into sulphurous acid or sulphur. The sulphuric acid made from this is exceedingly pure and the supplies of barium sulphate are enormous.

New Methods and Appliances.



DEVICE FOR BENDING SMALL PIPE.—The sketch herewith shows a simple device for bending ¾-inch and ½-inch pipe. The metal pieces are of strap-iron 2 inches wide and ⅜-inch thick. The two grooved wheels are identical in shape, measuring 4 inches in inner diameter and 5 inches over the flanges. At 8 inches from the center of the wheels a bridge is mounted on the bench to hold the pipe being bent. With the aid of the extended handle, powerful leverage is brought to bear and smooth bends can be made of any radius larger than that of the wheels.

The device will handle pipe up to ¾-inch in inside diameter.

PIPE COUPLINGS FOR GAS.—In a paper before the Mechanical Section of the Engineers' Society of Western Pennsylvania, on the subject of "Pipe Couplings," R. S. Lord, vice-president Hope Engineering & Supply Company, said in part:

The essentials of a good pipe coupling are tightness, flexability, allowance for expansion and contraction, strength and rigidity. The order in which these rank is not always the same, since for some classes of service great strength might be more important than absolute tightness. The degree of flexability required varies with the service. Natural gas lines laid over Pennsylvania or West Virginia hills must be capable of bending readily, while artificial gas lines laid to grade need little flexibility. The freedom of expansion or contraction is a very important feature, since without it breakage must often occur in spite of deep and expensive covering as a protection from varying temperatures.

In the matter of strength, present day demands require a very high standard. Artificial gas lines use what are called high pressures, but their range is never above 100 pounds. Natural gas pipe lines are laid in small sizes near the wells to control pressure up to the limit of the rock pressures which, in rare cases, run up to 1,200 or even 1,400 pounds. The small lines carrying such pressures to the nearest gate or reducing station hold against breakage very successfully, but the frosted couplings show the expansion of leaking gas. Fortunately, these extreme pressures are never carried any distance from the well, or operated for any length of time without natural reduction, due to expansion into a big pipe line.

Main lines of large sizes are now in fairly common use, carrying pressures up to 350 or 400 pounds, and it is necessary that such joints be bottle tight. It is no simple proposition to confine gas at such a pressure in a pipe of 20-inch diameter, but coupling manufacturers have solved that question fairly well. Oil lines of 10-inch diameter now work continuously at pressures up to 700 pounds, while in 6 and 8-inch trunk lines crossing the greater portion of the continent pressures run up to 900 pounds. Boosting pressures from 100 to 300 pounds has enabled gas companies to increase greatly the carrying capacity of their lines. Boosting to 600 pounds and continuing to boost whenever there is a slight fall in pressure will work wonders where the lines are sufficiently long to carry the system out with economy.

USED LUBRICATING OILS.—"Le Gaz" gives an account of tests made at the Conservatoire National des Arts et Métiers to determine how far lubricating oils can be re-used. It is known that vegetable and animal oils undergo changes that render them unfit for after use; and the question as to how far mineral oils are affected was submitted to test. Tests were made on fresh oil and oil used and recovered, for density, flash point, viscosity, refractive index, color, acidity, saponifying index, content of fatty matters and coefficient of friction. The findings were that the specific gravity rises slightly, as does also the flash point, indicating that some of the volatile components escape during the use of the lubricant; the viscosity is unaffected; the coefficient of friction is but slightly altered. When the lubricant was a mixture of mineral and animal oil there was a marked deterioration. The conclusion is that a pure mineral oil lubricant can be recovered by filtration, and used again and again with success.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

TO POPULARIZE gas for heating, the San Diego Gas and Electric Company in March announced reduced rates for gas in three steps, designed to secure restaurant and hotel cooking, domestic heating, and industrial business. Up to this time oil distillate and other fuels had been pretty generally used for these purposes, but Southern California's climate and conditions seem to favor gas; and, simultaneous with the reduction in rates, solicitors were put in the field, newspaper advertising was carried in the company's regular space, and an organized effort to increase this class of business was gotten under way. During the first six weeks the following business was secured: Four gas ovens, two 2-oven ranges and one complete gas kitchen in large cafes; one gas-fired boiler to supply steam-table in cafeteria, one hotel range, one coffee urn, one steam-table; heating and water-heating for 72 rooms, and a trial kitchen installation at Hotel Grant; one automatic refrigerating machine, one gas range for candy store, one range and water-heater for a delicatessen; 27 radiators, 56 automatic water-heaters, 21 ranges, 6 tank water-heaters, and 2 gas furnaces for domestic use. And, in addition, a large number of prospects for hotel kitchens, cafeterias, industrial business, apartment and residence heating.

A. F. B. HARRADEN, for some years manager of sales for Shapiro & Aronson, New York has been given the title of general sales manager, and is in charge of all departments, local and general.

A COKE COMPANY that has an old-style Junkers calorimeter was held up in its gas-testing department by need of repairs for the instrument and the fact that it could not get parts from Germany. Their chief chemist was very glad to learn that the American Meter Company was equipped to do all kinds of such repair work, and perhaps others would like to know it, also.

AS A RESULT of conferences between the Building Code Committee of the Advisory Council of Real Estate Interests and representatives of gas, water and steam companies in New York City, a solution has been reached lessening the burden of the ordinance providing that shut-off valves must be placed on gas, steam, or water pipes on the outside of all new buildings, and on all existing ones of over 15 sleeping-rooms or occupied by three or more families. The Consolidated Gas Company has agreed to assume the expense of their installation at the curb on gas pipes, obviating the necessity of placing automatic or manual stop-cocks in the building. The steam-heating companies will provide at their own expense, any additional valves needed, and the only difficulty is as to whether or not property owners will be required to bear the expense for valves on water pipes. The city water department has no funds to pay for the installation, and is not prepared to state that any funds will be provided.

AT the annual meeting of the Brockton (Mass.) Gas Light Company's Employees Association, John J. Sheehan was re-elected President, and other officers are: Vice-President, Hector Mongeau; Recording Secretary, A. W. Sides; Financial Secretary, Henry Godet; Treasurer, Mark Fitzmaurice; Trustees, E. B. Mooney, Joseph String, and Wilfred Jodoin. Superintendent Morrison awarded diplomas to fifty who have completed the course of instruction in gas appliances. The members adjourned to G. A. R. Hall, where three reels of motion pictures were shown by F. S. Miller, of the National Tube Company of Pittsburgh, illustrating the manufacture of pipe. Henry B. Sylvester, J. J. Barry and C. H. Ferguson, of the Plant Chapter of the Telephone Company, with 30 men, and Messrs. Avery, Nelson, and Forbush, of the Edison Illuminating Company, and 30 men, were guests. A buffet lunch was served under the direction of E. B. Mooney, Joseph String and Charles A. Bush.

THE Canton (Ills.) Gas and Electric Company has just had a very successful gas show lasting 3 days. A domestic science lecturer gave daily talks, and representations of Detroit Jewel and Reliable ranges explained their stoves. All the latest appliances were shown, and souvenirs given to all the lady visitors.

ENOUGH work has been outlined by the Webster and Southbridge Gas and Electric Company to keep a gang of laborers busy in Southbridge, Mass., all summer; 10,610 feet of gas mains will be laid including 1,600 feet in West Main street, from Pleasant street to the Carney house; in Harrington street, Fairlawn district, 1,000 feet, and in Eastford road, 2,500 feet, and 700 feet in East Main street. The company will lay 1,200 feet in Pleasant street, from Walcott street, over the hill, and 400 feet on Mill street, 700 feet on West street, 610 feet on Fiske street, 1,500 feet on Cliff street and 400 feet on Clark street.

A GAS rate of 80 cents per 1,000 cubic feet for the coming fiscal year has been agreed upon by the Lighting Rates Committee of the Board of Supervisors of San Francisco, and the Pacific Gas and Electric Company. The present rate, under city ordinance, is 75 cents, but the company has collected, under injunction, 85 cents per 1,000 cubic feet, the difference of 10 cents being held in escrow pending a settlement of the case in the Federal courts.

THE Harrisburg (Pa.) Gas Company has agreed to lay its new mains on Front street in the grass plots along the east curb line, instead of cutting through the newly-laid asphalt. Unanimous consent of the property owners is necessary, and work is waiting upon this.

THE Newton (N. J.) Gas and Electric Company has applied to the State Commission for authority to increase its rates for gas.

JAMES LAWRENCE, of New York, auditor for American Light and Traction Company, and A. Kurtz, auditor for the Milwaukee Gas Company, have completed the annual inspection of accounts for the Grand Rapids (Mich.) Gas Light Company.

ANNOUNCEMENT is made by the utilities company that recently took over the plant of the Hoopeston (Ill.) Gas and Electric Company that it had let contracts for equipment and improvements in the plant to cost in the neighborhood of $50,000, and which will result in giving Hoopeston one of the most up-to-date gas and electric plants in the United States.

MEMBERS of the Federated Improvement Associations of Dayton, O., say that should the city and officials of the Dayton Gas Company be unable to come to terms with respect to natural gas rates the city will take steps to purchase the gas plant and operate it. A committee was named to investigate the situation and report as early as possible.

IN a communication to the Mayor and City Council the Kalamazoo (Mich.) Gas Company offers to the city its present holdings at the assessed valuation of the plant, $1,875,000. The communication further said, that should the city decide to have a municipal plant and not care to pay the above mentioned price, that the company would concede to arbitration, accepting the figures set by an arbitration board. In the event that the city should not care to purchase the property, the company would be glad to renew its franchise, and would submit to a maximum gas rate, set by the city council or some other official board, at the termination of each five years.

MR. HERBERT A. WAGNER, President of the Consolidated Gas, Electric Light and Power Company of Baltimore, was elected First Vice-President of the National Electric Light Association at the recent convention in San Francisco.

DENVER and Colorado have received advertising in newspapers of 60 eastern cities through the efforts of W. J. Barker of the Denver Gas and Electric Light company. Attractions for tourists have been described in three advertisements prepared by "The Times" and "The News," and the Henry L. Doherty companies have had them published in their paid space in the newspapers of the various cities.

THERE is evidence of healthful growth of population and business in Pueblo, Col., in the fact that the Pueblo Gas and Fuel Company is now serving 7% more customers than were served a year ago. Every day brings new applications for meters, and they have begun work on the largest single piece of extension work undertaken in several years. Fred H. Maloney, commercial manager, is quoted as saying: "We have just closed a contract with Charles M. Welch, proprietor of Newport Addition, near Mitchell Park, to lay gas mains in Newport through East Eleventh and East Twelfth streets,

in College avenue in front of Mitchell Park, and in the connecting streets, to enable us to serve the 21 new houses that have been built in Newport during the past 19 months. Three other houses are under way there now, and two have been contracted for to be begun next week."

THE Muskegon (Mich.) Traction and Lighting Company has added several blocks of gas main to its equipment in Lakeside. Beginning at Mann avenue, on Harrison street, the new mains extend westward along Harrison to McCracken, thence south on McCracken to Miner, west on Miner to Denmark, and from this corner are being laid further south. This section of the city is building up rapidly, together with the part known as the Piano Addition.

THE East Boston (Mass.) Gas Company are making a special offer on gas water heaters. The heater installed costs $21, payable $3 down and $1.50 every 3 months, which really amounts to 3 years' credit.

THE Peoples Lighting, Heating and Power Company, Barre, Vt., has found it necessary to advertise warning its consumers to beware of anyone selling devices not recommended by the company, and that any device placed on the gas piping by other than one of its regular employees will be at the consumer's risk.

THE California Railroad Commission has fixed the rate for gas in Vallejo as follows: $1.50 per thousand for the first 5,000 feet; $1 for the next 5,000 feet, and 90 cents for all over 10,000. The old rates were $1.50 for less than 10,000 feet monthly and $1.25 for everything above 10,000 feet. The Pacific Gas and Electric Company's plant in the Vallejo district is valued at $219,295 for rate-making purposes.

SUPERINTENDENT W. P. KNOWLES, of the Richmond (Va.) Gas Department, has been instructed by the Administrative Board to report a plan and estimate of cost for installing gas mains to take care of Barton Heights, Highland Park, Ginter Park, North Richmond and adjacent territory, for both high and low pressure systems. The plan is to be prepared in accordance with the general outlay designed by Forstall & Robison for the whole city, about two years ago. Most of the territory named is served by the Henrico Gas Company, which operates under a charter granted by Henrico County. The company is a subsidiary of the Southern Gas and Electric Corporation, which has made an unsuccessful attempt to secure control of the Richmond Gas Works through a leasing arrangement.

AN ORDER has been issued by the Massachusetts Board of Gas and Electric Light Commissioners, on the complaint of the Selectmen of Milford of the price of gas sold by the Milford Gas Light Company, recommending that on and after July 1st the company offer a discount of not less than 5 cents per 1,000 cubic feet to all customers paying their bills within 15 days after presentation. The company is selling gas in Milford and Hopedale at $1.50 per 1,000 cubic feet without a discount except on bills of $50 or more a month, upon which 15% is allowed, and there are but two customers who are using enough gas to obtain this discount.

THE Sun Vapor Light Company, Canton, O., furnished the gas street lighting equipment of Upper Sandusky, O., and has a 5-year contract for its operation. The lighting on the side streets is by single mantle Welsbach burners; and the main streets have ornamental posts carrying three globes, each globe inclosing two inverted mantles. After a band concert in honor of the completion of their White Way Lighting, the business men of the city paraded through the main streets; and were afterward entertained at a banquet by Mr. Theo. Streiber, the representative of the company who had been in charge of the installing of the lamps.

THE Aberdeen and Hoquiam (Wash.) Gas and Power Company is reported to have an option on half a block in the Evans & Lewis addition, as a site for its plant. This is the competing company that proposes to build in Aberdeen.

THE Des Moines, Ia., ordinance reducing the price of gas from $1 to 90 cents, asserted by the Des Moines Gas Company to be confiscatory, has been sustained by decision of the Supreme Court. The company complained that a valuation of $300,000 as a "going concern" was not included in the valuation upon which the gas price reduction was ordered.

UTILITIES COMMISSION NEWS.

APPEAL FROM COMMISSION ORDER.—The Consolidated Gas, Electric Light and Power Company of Baltimore has filed its appeal from the order of Maryland Commission providing for gas of 645 B. T. U. and 20 candle power, this being the assumed quality of gas furnished prior to the reduction in price from 90 to 80 cents. It provided, however, that if the company would reduce the price to 75 cents it might put into effect the single standard of 600 B.T.U.

Before the filing of the petition Charles M. Cohn, vice-president of the company, sent a letter to Chairman Towers of the commission announcing the company's intention to appeal.

"We have never hitherto appealed from any order which the commission has passed," the letter states, "and it has always been and always will continue to be our aim to co-operate with the commission in every way possible for the good of the public and the attainment of the ends for which the commission was created. We feel, however, that there are compelling reasons which make it impossible to assent to either of the alternatives now offered us under the Commission's order.

"The second alternative—a reduction of 5 cents in the price of gas—we could not adopt, for the reason that it would represent an exaction much greater in amount than even the cost of complying with the new double standard, which is the first alternative offered us under the commission's order.

"The double standard we cannot voluntarily submit to for a number of reasons: First, it is higher than any standard to which the company has ever been subject by law or to which it has ever conformed in fact; second, it is higher than the standard applied to any other company in the State; third, it is, we feel, higher than good service requires or economic management permits, thus entailing expense to the company without real benefit to the consumer; fourth, it appears to have been prescribed because of a mistaken belief that the company at the time of its last rate reduction intentionally lowered the quality of its gas in order to save expense of production, and thus escape the result of reduced rates.

"The company, in fact, since the rate reduction of July 1, 1913, lowered neither the quality of its gas below the legal standard nor the expense of producing it. On the contrary, the actual cost of the gas furnished during the fiscal year ending June 30, 1914, was much greater than such cost for the preceding year."

DID NOT GET AWAY WITH IT.—The California Railroad Commission has denied the application of the Central California Gas Company to issue $25,700 in stock and $32,000 in bonds, because of alleged fraudulent financial practices. Among the irregularities uncovered the Commission cites:

Discrepancies between the amounts reported expended under the orders of the Commission and the amounts actually expended.

Reported purchase of $19,000 of property which, upon examination, cannot be found among the properties of the gas company.

Profit of $33,000 made by C. S. S. Forney, president of the company, and his associates, through the medium of a construction company for work done for the gas company costing $72,000. The Commission declares: "Either Mr. Forney grossly deceived this Commission in stating that he could operate cheaply through the construction company. or he must justify a profit to himself of 466% of the cost of the work."

Alleged payment of $25,000 to a contractor, W. H. Brown, for which there is no voucher or check, and which covers work otherwise paid for, there being evidence only of the actual payment of $1500 to Brown. Discrepancy of $28,000 in amount reported expended by the gas company. Company's report of a surplus of $611 found to be untrue; instead, a deficit of $14,753 is found. Fictitious surplus built up of approximately $15,000, and this sum improperly paid out in dividends. Operating expenses of the company concealed. Actual operating expenditures of the company, such as freight bills, salaries, telephone bills and traveling expenses carried as though they were assets of the company, thus making a false statement of the company's financial position. False representations of the company's earnings.

The Commission states that the Central California Gas Company should take steps to compel the restoration of moneys improperly deflected; and that after it has submitted and received the approval of the Commission of its plans for the restoration of its affairs to a proper basis, it may again make application to the Commission.

The Commission points out that the gas company may meet its immediate needs by collecting the money that was improperly paid out in dividends.

Financial Notes.

EXPLAINING the terms under which the stock dividend of common stock is distributed, and its effect on the company, the PACIFIC GAS AND ELECTRIC COMPANY has addressed a circular to stockholders, which says: "Under the terms of this company's general and refunding mortgage it is required to set aside each year a sum equivalent to 1% of the entire amount of its outstanding funded debt and to apply this money to the redemption of bonds. As the redemption of these bonds means so much of the company's capitalization permanently retired, with a corresponding reduction in interest charges, it would be a proper and logical procedure to reimburse the treasury for these outlays by the sale of other securities. If this were done the revenues so restored to the treasury would of course be available for general corporate purposes, including the payment of cash dividends on the common stock. It has seemed to your board, however, that such a course would not be as conservative nor as fair to all concerned as distributing directly to the stockholders the common stock issued in substitution for the retired interest-bearing obligations. The total amount of common stock which will be distributed is $1,926,600 and represents an equivalent amount of bonds retired through the operation of sinking funds since Jan. 1, 1914. We wish to emphasize: (1), that practically $100 in cash has been paid in against each share of this stock, and (2), that the company's total outstanding capitalization will not be increased as a result of this distribution. It is the expectation of your board to continue similar distributions of common stock from year to year in addition to such cash dividends as the earnings of the company warrant. As the obligatory bond retirements are running at the rate of about 2½% per annum of the common stock outstanding, it is anticipated that the dividends which may be paid in common stock in future will be approximately at this rate. It has been the practice of your company for a number of years to set aside each year a portion of earnings as a reserve for depreciation. The amount so set aside this year will be $1,200,000. We make this statement to remove any possible apprehension that the policy above outlined will disturb the present relation between assets and issued capital."

THERE is much conjecture as to how many customers of the CONSOLIDATED GAS, ELECTRIC LIGHT AND POWER COMPANY, of Baltimore, will take advantage of its offering stock on the installment plan. The guesses as to the number which will take advantage of the offer vary from 5,000 to 50,000. Many in the banking district are convinced that when the plan is fully understood by the average consumer they will take advantage of it, just as was done when the city offered its 4% stock over the counter at 90. The impression is based on the belief that the dividends on the stock are almost assured from the position the company occupies in the community, and because it is steadily increasing its output. The statement of Mr. Aldred that it is not to obtain money, but to secure greater support of the consumers, that the offer is made, is a favorable factor that will induce many to come in. The stock is still neglected in the trading at the Stock Exchange, and the shares are likely to remain quiet until it is demonstrated how many will buy at $106½. This is fractionally higher than the present quotations.

THE directors of the WORCESTER GAS LIGHT COMPANY have declared a 2% dividend, but have omitted the extra dividend usually paid at this time of the year. President Dana B. Barnum made the following statement relative to the non-payment of the extra dividend: "On account of the expense in the construction of new coal gas generating plant and gas holder, which have been built for the future requirements of the business, and also because of the business depression, the extra dividend usually paid at this time has been omitted for the present."

THE LOUISVILLE GAS AND ELECTRIC COMPANY, of Kentucky, has listed $8,500,000 of its first and refunding five-year 6% bonds on the New York Stock Exchange.

THE UTAH GAS AND COKE COMPANY, a subsidiary of the American Public Utilities Company, will pay on July 1st a quarterly dividend of 1¾% on its preferred stock.

THE BROOKLYN BOROUGH GAS COMPANY has declared the regular half-yearly dividend of $3 a share, payable on July 26th to holders of record June 30th.

AT a recent special meeting of the NEW ENGLAND COAL AND COKE COMPANY the resignations of Directors Samuel Carr, C. F. Adams, J. B. Russell and J. L. Richards were received and accepted. Mr. Richards also resigned as president of the company, and was succeeded by Robert Grant. The new directors elected were C. Minot Weld, Edward Page and E. M. Richards. This action on the part of the directors was prompted because of the recent legislation in Massachutetts, although it is not at all clear that the legislation referred to is constitutional.

THE COLUMBIA GAS AND ELECTRIC COMPANY has obtained control of the United Fuel Gas Company of West Virginia through the acquisition of 51% of that company's capital stock, and in addition a large amount of cash, both in exchange for securities now owned by it in the East Ohio Gas Company.

THE Virginia, Minn., City Council is to issue $30,000 additional indebtedness certificates, the money to be applied to extensions to the gas plant. When the proposition to construct the plant was arranged the city council agreed to issue certificates in the sum of $75,000 at the rate of $25,000 per year, and the sum of $30,000 is now needed by the Commissioners to make the necessary extensions to the plant.

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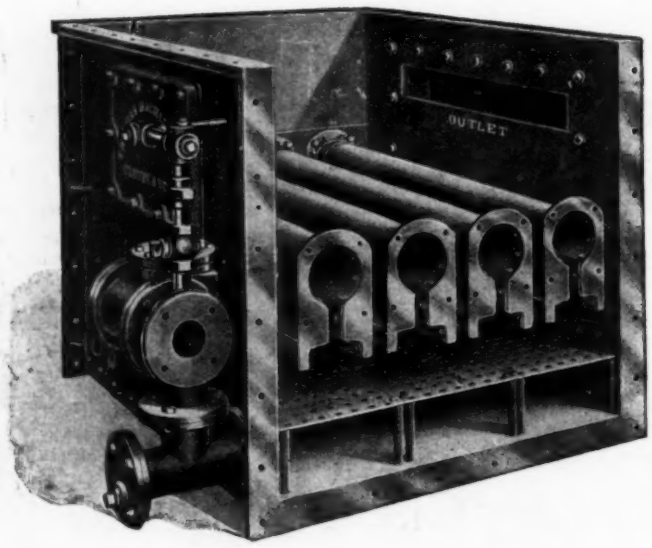

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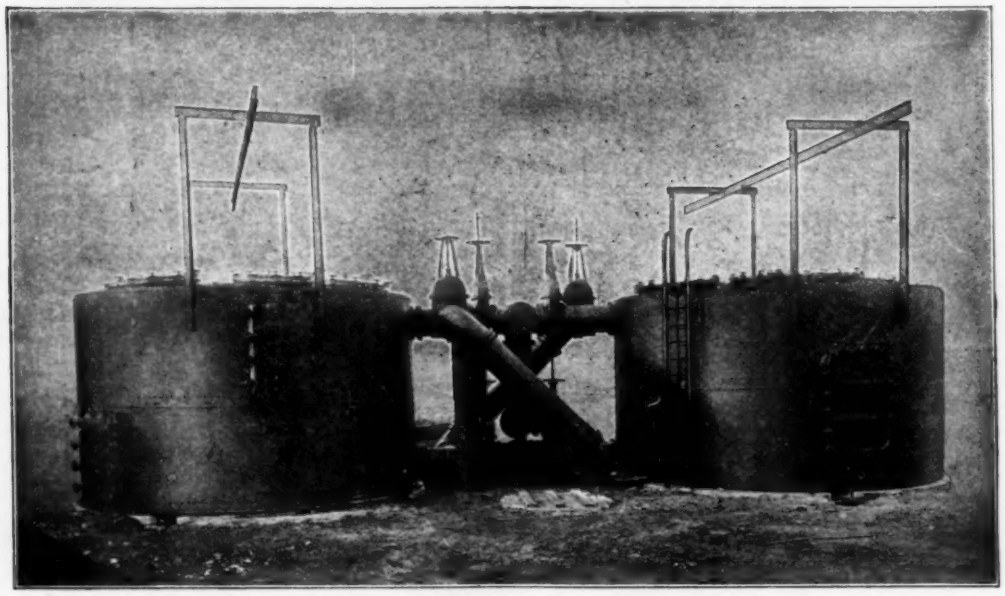

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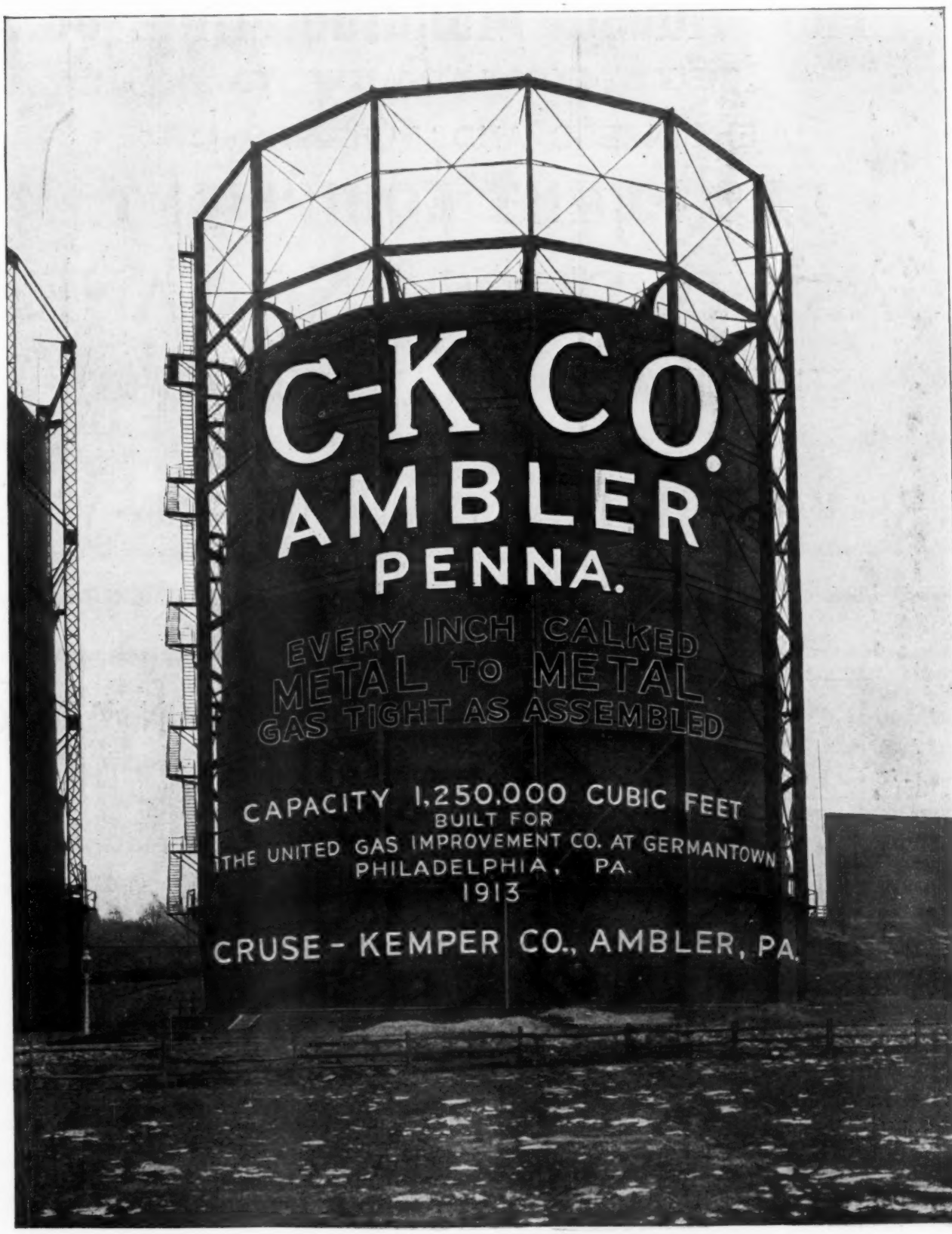
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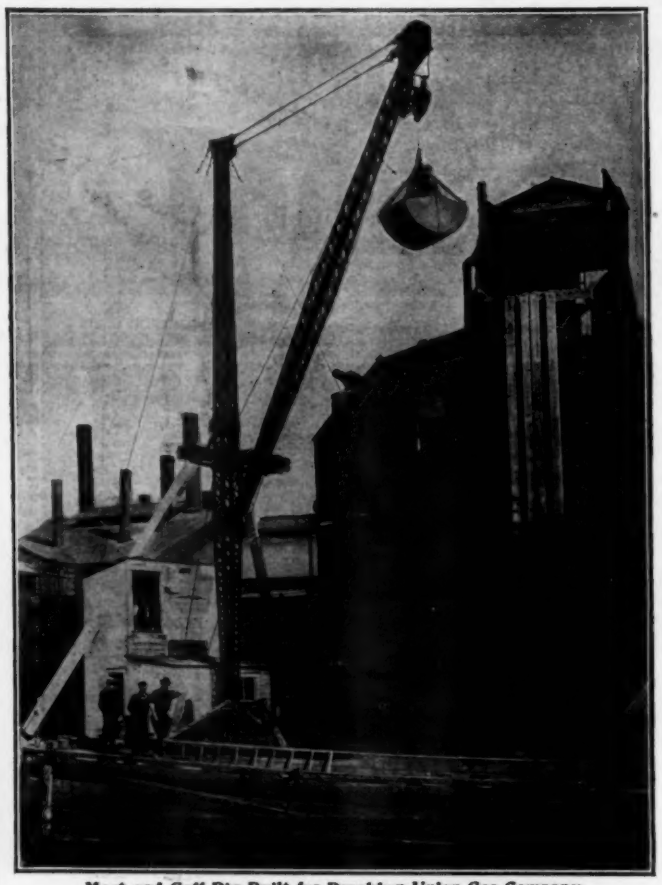

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BRADFORD	2 "
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NEWCASTLE, N. S. W	1 "
BELFAST	2½ "
NELSON	1¼ "
BLACKPOOL	¾ "
STOCKHOLM (Sweden)	1½ "
BERGEN (Norway)	¾ "
NEWCASTLE-UPON-TYNE	2½ "
HEYWOOD	½ "
DARLINGTON	2 "
OLDHAM	2 "
BRIDGWATER	½ "
SOUTHPORT	1¼ "
CAMBUSLANG	½ "
NOTTINGHAM	2½ "
TIPTON	1¼ "
LEICESTER	4 "
EXETER	½ "
MANCHESTER (2d Installation)	1 "
BARNOLDSWICK	½ "
GOTEBORG (Sweden)	1 "
CAPETOWN (South Africa)	½ "
FITCHBURG, U.S.A. (2d Instal.)	¼ "

	Capacity in Cubic Feet per diem.
HONG KONG (China)	¾ Million.
SYDNEY, N.S.W. (2d Installat'n).	
BERLIN (Germany)	¼ "
LIVERPOOL	2½ "
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NORTHAMPTON	1¼ "
CARDIFF	2½ "
BLACKPOOL (2d Installation)	¾ "
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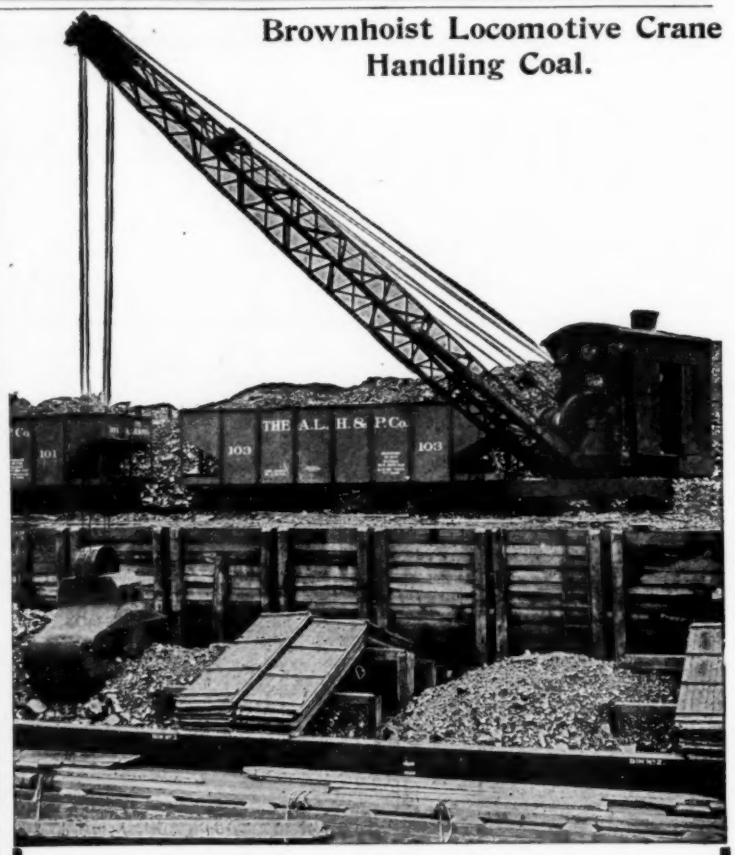

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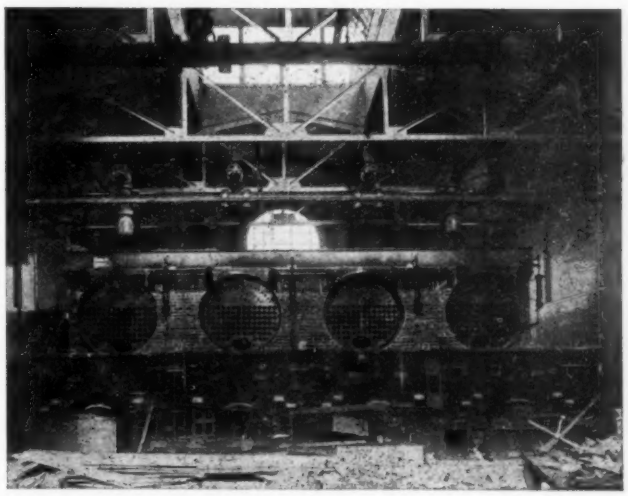

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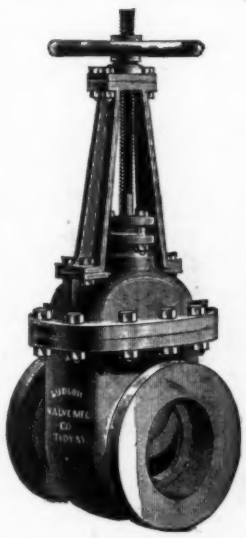

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233 BROADWAY,
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EXAMINATION AND VALUATION OF PUBLIC UTILITY AND POWER CORPORATIONS.
ADVICE AS TO CONSTRUCTION AND MANAGEMENT.

Main Laying

Either High or Low Pressure
We can save money, time and tools for you.

Sullivan Brothers

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We TEST Coal

Electrical Testing Laboratories

80th St. and East End Ave, New York City

GEROULD'S IMPROVED RETORT CEMENT

The Old Reliable

A Cement of great value for patching retorts putting on mouthpieces, making up all bench-work joints, lining blast furnaces and cupolas. This cement is mixed ready for use. Economic and thorough in its work. Fully warranted to stick.

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Solicitor of Patents and Counsellor in Patent Causes.
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Send for Pamphlet on Patents.

IRON HYDROXIDE now used in 241 Gas Works.

IRON HYDROXIDE COMPANY,
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In connection with the Design and Construction of Coal Gas Works, Gas Distribution Systems, Electric Light and Power Plants.

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Gas---Water---Electric Light---Sewers.

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SILICA GRAPHITE PAINT

More than fifty years of practical service have made this the standard protective paint for all metal surfaces exposed to weather. Send for Paint Booklet No. 231.

Made in JERSEY CITY, N, J., by the

Joseph Dixon Crucible Co.

Established 1827.

SAVE MONEY BY USING

BEHREND'S LUX GAS PURIFYING MATERIAL.

It will reduce your Purification cost and increase capacity of your Equipment. The largest Works in America use it, because it makes their purification per thousand less than any other material. Write for booklet and prices.

F. BEHREND, 54 Front Street, New York, N. Y., Sole Importer.

The "DEAD ONE" Said:

"Oh that 'Hook 'er to the Biler' fellow makes me tired."

Then he muttered something like "Hot air."

Poor fellow, he'll wake up some day.

At any rate we will keep right on blowing this old Gas Light Journal horn.

We do not think any "DEAD ONE" really wants to be dead. The trouble of it is, when you are "DEAD," you never know you are "DEAD."

When you find a "DEAD ONE" out behind the purifier house kicking himself because he thought this ad. was written and paid for by a ——— and went and bought the "kind we have always used" (and cursed),

It is a sign that "DEADIE" has come to LIFE.

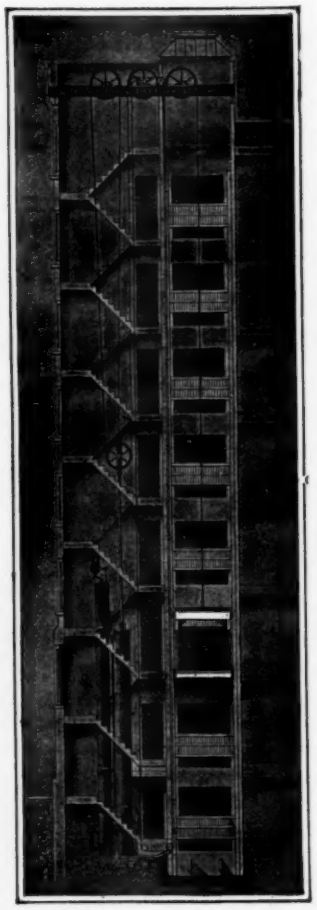
Here is what we are giving hundreds of Gas Works all over the land:

1. An elevator that runs at virtually no cost.
2. That is absolutely fool proof.
3. No repairs.
4. Always goes so long as the boiler holds together.
5. Goes when the engine is shut down.
6. NO PAY UNTIL IT MAKES GOOD.

This is why every gas man but a "DEAD ONE"

"HOOKS 'ER TO THE BILER."

THE GAS MAN'S PET.



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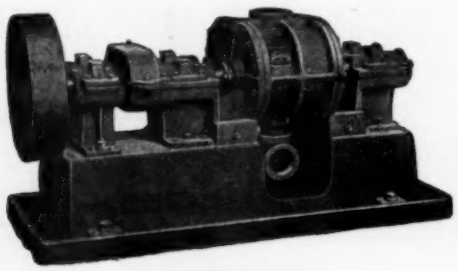
ELEVATOR MAKERS TO FOLKS WHO KNOW.



THE CONNERSVILLE VALVELESS ROTARY PUMP

Is peculiarly adapted to pumping tar or other heavy, viscous liquids.

It has no valves, no reciprocating motion, no dead centers, no internal friction or wear.

All bearings are full Babbitted and ring-oiling.

New Bulletin describes these Pumps fully.

Ask for Bulletin 19-A.

THE CONNERSVILLE BLOWER COMPANY,

CONNERSVILLE, INDIANA.

PUBLIC LIGHTING TABLE FOR JANUARY, 1915.

COMMUNICATED BY THE AMERICAN METER COMPANY.

Day of Week.	MOONLIGHT SCHEDULE.		
	Date.	Light.	Extinguish.
Friday	1	No L.	No L.
Saturday	2	5.10 P.M.	6.50 P.M
Sunday	3	5.20	8.00
Monday	4	5.20	9.10
Tuesday	5	5.20	10.20
Wednesday	6	5.20	11.30
Thursday	7	5.20	12.40 A.M.
Friday	8	5.20 L.Q.	1.50
Saturday	9	5.20	3.00
Sunday	10	5.30	4.20
Monday	11	5.30	5.40
Tuesday	12	5.30	6.20
Wednesday	13	5.30	6.20
Thursday	14	5.30	6.20
Friday	15	5.30 N.M.	6 20
Saturday	16	5.30	6.20
Sunday	17	5.30	6.20
Monday	18	5.30	6.20
Tuesday	19	5.30	6.20
Wednesday	20	9.40	6.20
Thursday	21	10.40	6 20
Friday	22	11.50 F.Q.	6.20
Saturday	23	12.50 A.M.	6.20
Sunday	24	1.50	6.10
Monday	25	2.50	6.10
Tuesday	26	3.50	6.10
Wednesday	27	4.40	6.10
Thursday	28	5.20	6.10
Friday	29	No L.	No L.
Saturday	30	No L. F.M.	No L.
Sunday	31	No L.	No L.

J. S. DeHART, JR., PRESIDENT
A. F. WEHNER, SECRETARY
R. K. WEHNER TREASURER

ISBELL-PORTER COMPANY

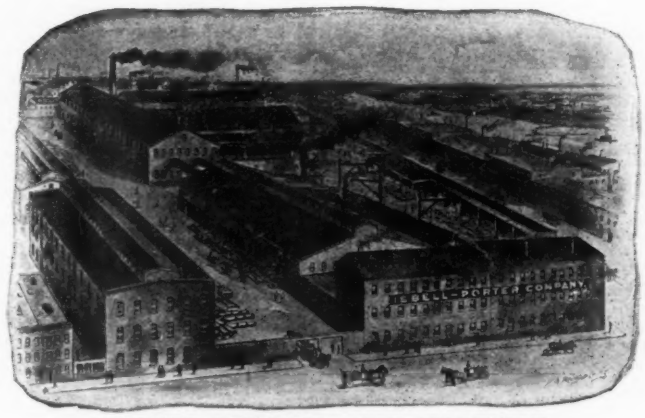
GAS ENGINEERS & BUILDERS OF GAS WORKS

BENCH WORK

CHARGING AND DISCHARGING MACHINERY

MACKENZIE EXHAUSTERS

PRIMARY AND SECONDARY CONDENSERS FOR FRESH OR SALT WATER



ISBELL VALVES SPECIALS

TAR EXTRACTORS

P&A. TAR EXTRACTORS FOR WATER GAS

ROTARY AMMONIA SCRUBBERS

SHAVING SCRUBBERS PURIFIERS STREET GOVERNORS

MAIN OFFICE AND WORKS
BRIDGE & OGDEN STREETS
NEWARK, N. J.
ESTABLISHED 1865

R. D. WOOD & CO.,
400 CHESTNUT ST., PHILADELPHIA,

MANUFACTURERS OF
Cast Iron Pipe.
HEAVY LOAM CASTINGS,
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LAMP POSTS, VALVES, ETC.,
Gas Power Plants with Producers.

BUILDERS OF
Gasholders.
Single or Multiple Lifts, with or without Metal Tanks.

PURIFIERS, CONDENSERS, SCRUBBERS, BENCH WORK.

Cutler's Patent Freezing Preventer for Holder Cups.

BERWIND-WHITE COAL MINING COMPANY'S

Ocean Westmoreland Gas Coal.

Offices:
Washington Building, New York.
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STRICTLY High Grade. . . . .
Carefully Prepared.
For Gas Making or
Heavy Steaming. .

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Established 1858. Incorporated 1890.
CHAS. E. GREGORY, Prest. DAVID R. DALY, V.-Prest. & Treas. H. D. ABERNETHY, Sec.

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COAL GAS BENCHES
SILICA RETORTS AND SETTINGS.
Clay Gas Retorts, Fire Brick, Water Gas Linings, Etc.
Our Products Sold in NEW ENGLAND by
WALDO BROS., BOSTON, MASS.,
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FIRE BRICK—LININGS
Send for Catalogue
Missouri Fire Brick Co.
JOHN DELL
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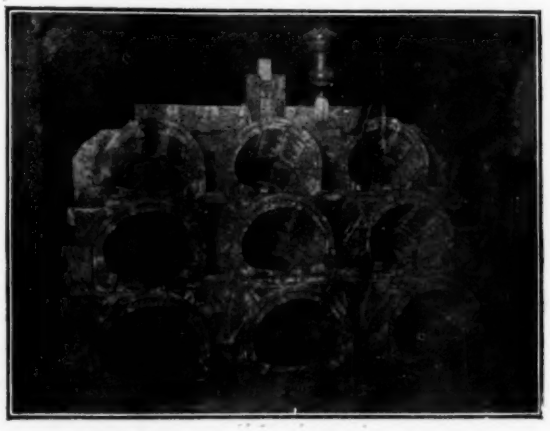

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THE IMPROVED EQUIPMENT CO.
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COAL GAS BENCHES.
SILICA ALL TYPES **CLAY**
COMPLETE CARBONIZATION PLANTS.
PARKER-RUSSELL MINING AND MFG. CO.,
ST. LOUIS. *ENGINEERS & CONTRACTORS.* *NEW YORK.*

The only positive insurance against leaks in gas mains is
LEAD WOOL.
Composed of fine, long fibers of **lead,** it allows of calking the **whole depth** of the **joint** from the yarn up. No melting pots required; it is applied **dry.** Best possible references. **Drop us a line** for samples and circulars.
NEW YORK LEAD WOOL COMPANY,
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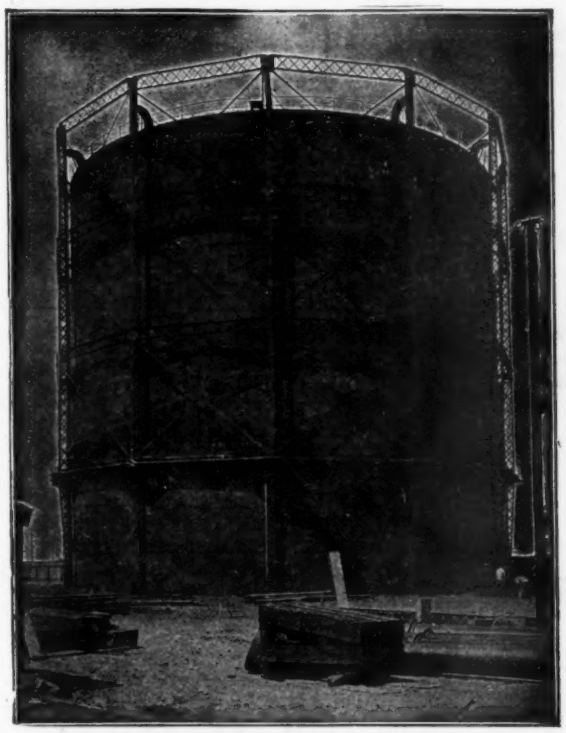

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39 Laurel Street, Philadelphia, Pa.

ESTABLISHED 1842. INCORPORATED 1908.

BUILDERS OF

GASHOLDERS,

Single-Lift or Telescopic,

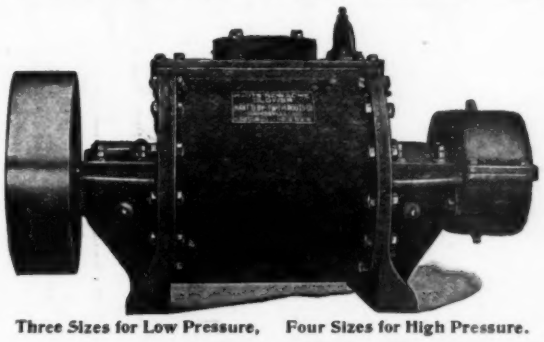
With or Without Steel Tanks.

Oil Storage Tanks, Water Tanks, Etc.

ESTIMATES CHEERFULLY FURNISHED.

CORRESPONDENCE SOLICITED.

ROOTS ACME BLOWERS are WELL BUILT.



Three Sizes for Low Pressure, Four Sizes for High Pressure.

They are sold as low as good construction permits.

They are not built to be sold cheap.

You want them for foul oxide and for all your Industrial Appliances. Made either for belt or direct connection to Motor.

P. H. & F. M. ROOTS COMPANY,

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NEW YORK OFFICE, 120 Liberty Street. CHICAGO OFFICE, 1245 Marquette Bldg.

DAVIS & FARNUM MANUFACTURING CO.

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GAS HOLDERS

Steel Tanks for Naptha Storage, Machinery for Coal and Water Gas Plants.

BY USING

"CARBURETER"

IN THEIR CHECKER WORK IN WATER GAS MACHINES

One of the Largest Gas Companies of the Country Reduced Their Loss in Checkering from 12 Per Cent. to Less than 3 Per Cent.

WOULD A LIKE REDUCTION INTEREST YOU?

UNION MINING COMPANY,

PROPRIETORS OF THE MOUNT SAVAGE FIRE BRICK WORKS,

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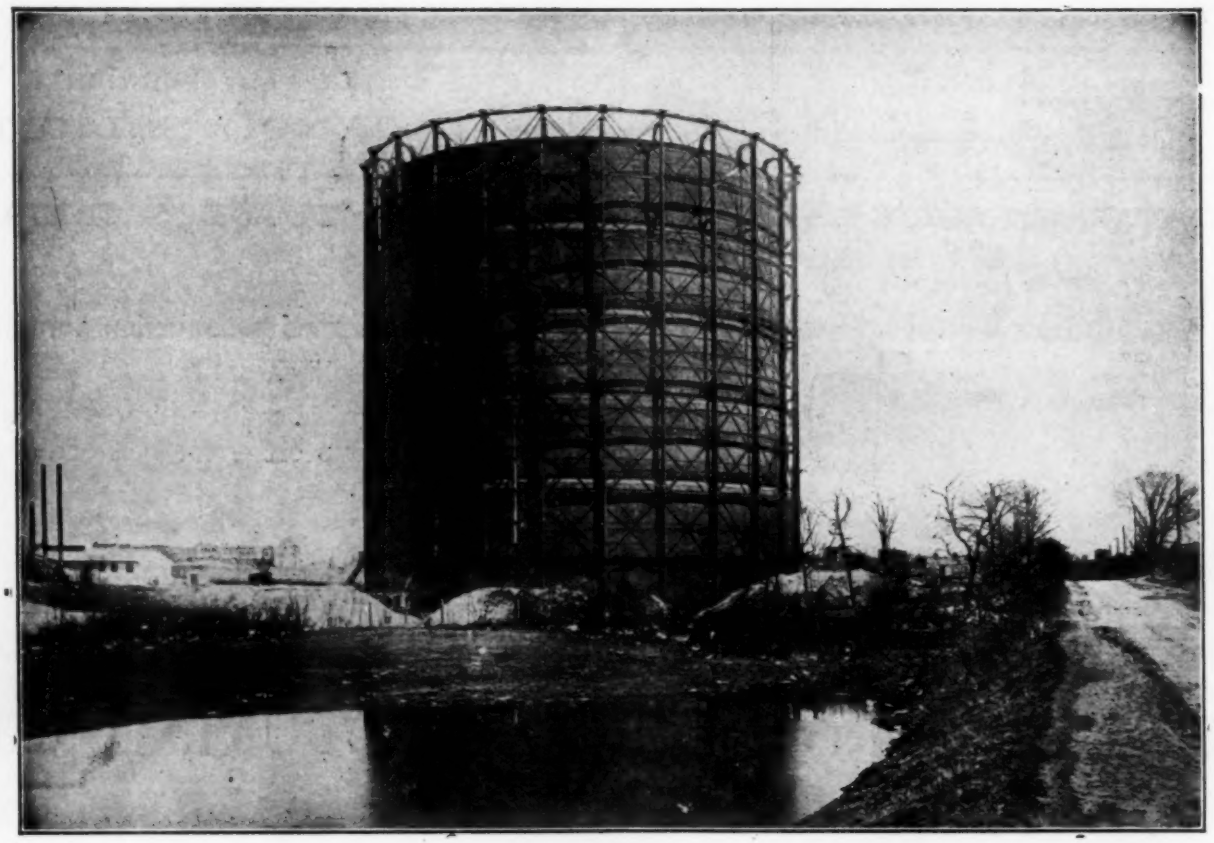
ONE OF TWO TEN MILLION (10,000,000) CUBIC FEET CAPACITY

GAS HOLDERS



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THE BARTLETT HAYWARD CO

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POSITIONS---BUSINESS OPPORTUNITIES.

The rate for special advertisements printed on this page is **$1.50** per inch in depth of column each insertion.

FINANCIAL NOTICES.

DIVIDEND NOTICE.

OFFICE OF THE UNITED GAS IMPROVEMENT CO., N. W. CORNER BROAD AND ARCH STS., PHILADELPHIA, Dec. 9, 1914.

The Directors have this day declared a quarterly dividend of 2 per cent. (one dollar per share), payable Jan. 15, 1915, to stockholders of record at the close of business, Dec. 31, 1914. Checks will be mailed.

2063-4 LEWIS LILLIE, Treasurer.

POSITIONS WANTED.

A first-class FITTER and APPLIANCE MAN (married), 12 years' experience.

Address, "BOX 9,"

2065-1 Care this Journal.

POSITIONS OPEN.

Wanted, FOREMAN STOKER who can take charge of coal gas plant in Michigan, running 2 benches. Steady work. Drinking men need not apply.

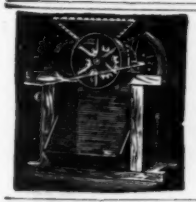
2064-2 Address, "X.," care this Journal.

MISCELLANEOUS.

Utilize Your Gas Liquor.
NO EXTRA LABOR OR OPERATING EXPENSES.

IMPROVED AMMONIA CONCENTRATOR.

About 130 in use. Write to STROH & OSIUS, Patentees, or MICHIGAN AMMONIA WORKS, - Detroit, Mich.



KELLER ADJUSTABLE COKE CRUSHER.

Strong, Simple, Durable. Will Crush any Size Desired.

C. M. KELLER,
Columbus, Ind.
Correspondence Solicited.

Gas Engineer's Pocket-book, HENRY O'CONNOR.

Comprising Tables, Notes and Memoranda relating to the Manufacture, Distribution and Use of Coal Gas, and the Construction of Gas Works. PRICE, $3.50. For Sale by

AMERICAN GAS LIGHT JOURNAL,
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Modern Machine Shop Construction, Equipment and Management, by OSCAR E. PERRIGO, M.E.

Price, $5. For Sale by
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Binding Time

starts Jan. 4th, 1915. Order a binder now, so that you will be ready.

PRICE, ONE DOLLAR.

American Gas Light Journal.

Practical Handbook on GAS ENGINES,
With Instructions for Care and Working of the Same,

By G. LIECKFELD, C.E.
Translated with Permission of the Author,
By GEO. M. RICHMOND, M.E.

Price, $1.

For Sale by
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COX'S LOW PRESSURE COMPUTER, $2.50
COX'S HIGH PRESSURE COMPUTER, 5.00

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STANDARD REDUCTION FACTORS for GASES,
By Helon Brooks MacFarland, B.S., M.M.E.
Price, $1.50. *For Sale by*
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CONNELLY NEW DISTRICT GOVERNOR.

NO Stuffing Boxes.
Exposed moving parts.
Auxiliaries.

Can be submerged without affecting the operation whatsoever.

Will maintain constant outlet pressure regardless of varying inlet pressure.

Cast
ENBLOCK
LIQUID SEAL.

PRECIPITATED { mixed.
IRON SPONGE { unmixed.

We invite consultations.

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Connelly Iron Sponge and Governor Co.
New York, Chicago
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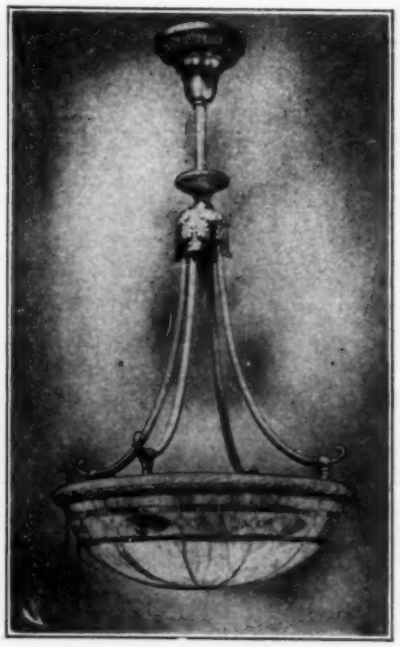
LLOYD'S DETROIT.

Dry Lute Purifiers

embodied the first practical construction of dry luting for all types of purifiers. And is still the Leader.



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THE gas company which is doing the largest fixture business for its size displays Bayley's

Semi-Indirect

Exclusively. We can help you double your fixture business as we have others.

BAYLEY & SONS, INC.

105 Vanderveer St., Brooklyn, N. Y.
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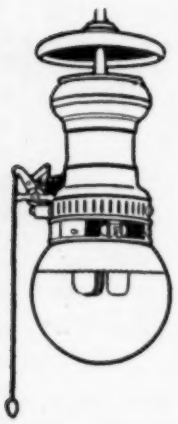


750,000 HUMPHREY INVERTED GAS ARC LIGHTS

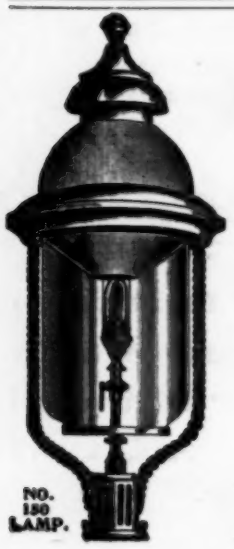
are on duty evenings, delivering the nicest, fullest volume illumination in the stores of leading merchants in the cities in these United States.

Why?

Because they cost half what electricity does---because the effulgence is softer and mellow---because the inverted feature does away with shadows---because there is less eye-strain to customers---because this light looks better and draws people. The exact representing of goods, colors and tints will help merchants pretty strong, and certainly a richer inside look of a store should appeal.

Doesn't it look like a mighty promising end of your business to develop more and more all the time, considering, too, that it will come through your existing main lines?

GENERAL GAS LIGHT COMPANY,
KALAMAZOO. NEW YORK. SAN FRANCISCO.



"THE MINER"
GLOBE STREET LAMPS
for
All Kinds of Gas or Burners.
Lamp Posts, Cocks and Burners, Everything Necessary for
STREET LIGHTING.

This cut shows our No. 150 LAMP, which is but one of a large variety of designs.

If you are intereated in street, or park lighting, we want to send you our catalogue and prices.

THOS. T. W. MINER,
819-823 Eagle Ave., - NEW YORK, N. Y.

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The pamphlets issued by manufacturers advertising in The American Gas Light Journal contain valuable data.

Write for them---read them.

People Must Have Light

No. 3329

A popular "Reflex" Campaign Light. Height, top of bunsen base to bottom of stack, 4¾ in. Standard finish, brushed brass Considerably smaller than the standard size "Reflex" lights, yet produces as much light as the No. 1 "Reflex" while consuming a third less gas.

Light *always* sells! Now, the gas salesman who is lucky enough to be handling the

NO. 3 "REFLEX" GAS LAMP

has this strong card to play:

"This lamp, that people *want*, for its decorative appearance and abundance of cheerful, restful light, is also the light they *need*, because of its great economy and efficiency."

A campaign on the No. 3 "Reflex" will prove this argument to your consumers *right in their homes*. This sales plan, successful everywhere, is stronger than ever when used with the small, attractive No. 3 "Reflex."

Plan Now for spring campaigning. We give special attention to campaign inquiries. Form No. 1756 gives full information on the No. 3 "Reflex."

Gloucester, *Welsbach Company* New Jersey.

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AMERICAN GAS INSTITUTE.—Annual meeting, San Francisco, Cal., week of Sept. 27, 1915. Officers: President, E. C. Jones, San Francisco, Cal.; Secretary, Geo. G. Ramsdell, 29 West 39th St., N. Y. City.

CANADIAN GAS ASSOCIATION.—Annual meeting, Montreal, Sept., 1915. Officers: President, H. E. Mann, Montreal; Secretary and Treasurer, John Keillor, Hamilton, Ont.

EMPIRE STATE GAS AND ELECTRIC ASSOCIATION.—Annual meeting, New York City, Oct., 1915. Officers: President, J. C. De Long, Syracuse, N. Y.; Secretary, C. H. B. Chapin, 29 West 39th Street, New York City.

GAS MEETERS.—Monthly Section Meetings; Grand Commissioner, L. R. Dutton, Wyncote, Pa.; Gen'l Sec'y, H. E. Stiteler, Philadelphia, Pa.
New York Section—Chairman, S. K. Campbell; Secretary, C. E. Chappel, B. U. G. Co., Brooklyn, N. Y.
Cleveland Section—Chairman, C. W. Downing; Secretary, W. H. Holtz, East Ohio Gas Co.
Philadelphia Section—Chairman, E. G. Bartlett; Secretary, R. H. Predmore, 1401 Arch Street.
New England Section—Chairman, C. E. Lasker; Secretary, A. F. Pettingill, Cambridge, Mass.
Bethlehem Section—Chairman, Trueman Weithnecht; Secretary, Truman Buss, So. Bethlehem, Pa.
Wisconsin Section—Chairman, C. H. Wiggers; Secretary, P. Hoffman, Milwaukee.

GUILD OF GAS MANAGERS OF NEW ENGLAND.—Annual meeting, March, 1915. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, J. A. Gould, Boston; Vice-President, N. W. Gifford, East Boston; Treasurer, W. F. Norton, Nashua, N. H.; Secretary, H. K. Morrison, Lynn.

ILLINOIS GAS ASSOCIATION.—Annual meeting, March 17, 18, 1915. Chicago, Ill. Officers: President, L. H. Johnson, Aurora, Ill.; Secretary-Treasurer, Horace H. Clark, 72 W. Adams Street, Chicago, Ill. Room 1325.

ILLUMINATING ENGINEERING SOCIETY.—Annual meeting, September, 1915. President, Dr. A. S. McAllister; General Secretary, C. A. Littlefield, 29 W. 39th Street, New York.
Chicago Section—Chairman, W. A. Durgin; Secretary, H. B. Wheeler.
New York Section—Chairman, Norman Macbeth; Secretary, Clarence L. Law.
New England Section—Chairman, Louis Bell; Secretary, S. C. Rogers.
Pittsburg Section—Chairman, G. W. Roosa; Secretary, S. G. Hibben.
Philadelphia Section—Chairman, H. A. Hornor; Secretary, L. B. Eichengreen.

INDIANA GAS ASSOCIATION.—Annual meeting, March 10 and 11, 1915. Indianapolis. Officers: President, A. C. Blinn, Evansville; Secretary-Treasurer, J. W. Dunbar, New Albany.

IOWA DISTRICT GAS ASSOCIATION.—Annual meeting, Dubuque, Ia., May ——, 1915. Officers: President, Thos. Crawford, Clinton, Ia.: Secretary, T. B. Genay, Des Moines, Ia.

MICHIGAN GAS ASSOCIATION.—Annual meeting, September, 1915. Officers: President, J. T. Young, Ann Arbor, Mich.; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

MONTANA GAS ASSOCIATION.—Annual Meeting, Helena, Mont., February, 1915. President, G. A. Strain, Helena, Mont.; Secretary, I. C. Covert, Billings, Mont.

NATIONAL COMMERCIAL GAS ASSOCIATION.—Annual meeting, Dec., 1915, Washington, D. C. Officers: President, H. B. McLean, New York, N. Y.; Secretary, Louis Stotz, 61 Broadway, New York City.

NATURAL GAS ASSOCIATION.—Annual meeting, Cincinnati, O., May 16, 17, 18, 1915. Officers: President, J. T. Lynn, Detroit, Mich.; Secy-Treas., T. Clive Jones, Delaware, O.

NEW ENGLAND ASSOCIATION OF GAS ENGINEERS.—Annual meeting, Boston, Mass., February, 1915. Officers: President, Chas. A. Learned, Meridan, Conn.; Secretary, N. W. Gifford, East Boston, Mass.

NEW JERSEY STATE GAS ASSOCIATION.—Next meeting, February, 1915, Glassboro, N. J. President, C. F. Butcher, Freehold, N. J.; Secy-Treasurer, O. F. Potter, Newark, N. J.

OHIO GAS ASSOCIATION.—Annual meeting, February ——, 1915, Columbus, O. President, John M. Garard, Columbus, O.; Secretary, L. B. Denning, Columbus, O.

PACIFIC COAST GAS ASSOCIATION.—Annual meeting, San Francisco, Cal., September, 1915. Officers: President, E. C. Jones, San Francisco, Cal.; Secretary-Treasurer, Henry Bostwick, 445 Sutter Street, San Francisco, Cal.

PENNSYLVANIA GAS ASSOCIATION.—Annual meeting, Phila., Pa., April 14, 15, 16, 1915. Officers; President, L. R. Dutton, Wyncote, Pa.; Secretary-urer, W. O. Lamson, Jr., West Chester, Pa.

SOCIETY OF GAS LIGHTING.—Annual meeting, December, 1915; monthly meetings, second Thursday. Place, New York City. Officers; President, Fred S. Benson; Secretary, George G. Ramsdell, 29 West 39th Street, New York City.

SOUTHERN GAS ASSOCIATION.—Annual meeting, Charleston, S. C., June 2, 3, 4, 1915. Officers: President, S. E. DeFrees, Chattanooga, Tenn.; Secretary-Treasurer, E. D. Brewer, Atlanta, Ga.

WISCONSIN GAS ASSOCIATION.—Annual meeting, January 20, 21, 22, 1915, Milwaukee, Wis. Officers: President, J. H. Walker, Milwaukee, Wis.; Secre-Treasurer, Henry Harman, Milwaukee, Wis.

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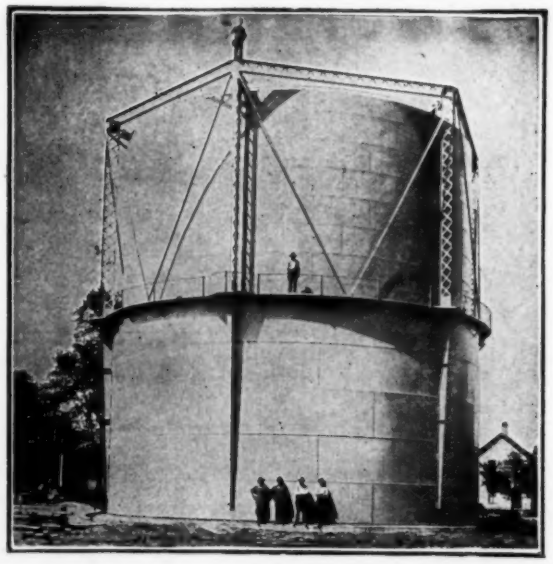

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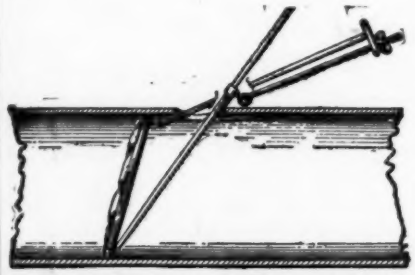

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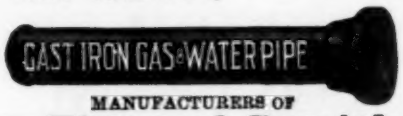

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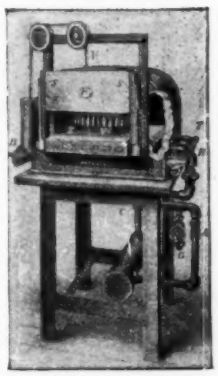

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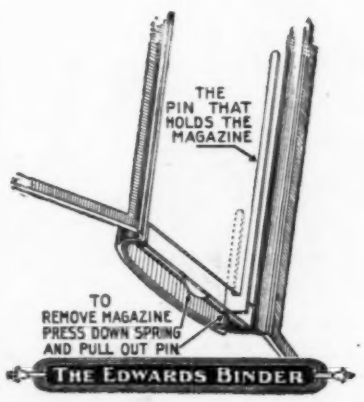

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United Lead Co. 24

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Western Gas Construction Co. ..... —
Westmoreland Coal Co. 26
White, J. G. & Co. ..... —
Wood & Co., R. D. 13

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Conveyors,
Stoking Machinery,
Water Gas Plants.

Arc Lamps.
See Lamps.

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New York Rubber Co.
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Crane Co., Wm. M.
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Burners. See Lamps.

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American Meter Co.

Carbonic Acid Extractors.
See Purifiers, Scrubbers.

Castings.
See Iron Work. Pipe.

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Stacey Mfg. Co.

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Cocks—Meter and Service.
American Meter Co.

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Byllesby & Co., H. M.
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Forstall & Robison.
Humphreys & Miller.
Improved Equipment Co.
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Randolph, Wm. W.
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Industrial Fuel Appliances.
American Gas Furnace Co.
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Instruments.—Recording.
American Meter Co.
Bristol Co.
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Iron Work.
Cruse-Kemper Co.
Gas Machinery Co.
Gas Engineering Co.
Kerr Murray Co.
Riter-Conley Mfg. Co.
Stacey Mfg. Co.
Wood & Co., R. D.

Lamps.
Bayley & Sons.
Crane Co., Wm. M.
Gas Tip and Self-Lighter Co.
General Gas Light Co.
Miner, Thos. T. W.
Pennsylvania Globe Gas Light Company.
Welsbach Co.
Welsbach Street Lighting Co.

Lamp Posts.
Donaldson Iron Co.
General Gas Light Co.
Miner, Thos. T. W.
Pennsylvania Globe Gas Light Company.
Welsbach Street Lighting Co.
Wood & Co., R. D.

Lantern—Safety.
Connelly Iron Sponge and Governor Co.

Lead.
New York Lead Wool Co.
United Lead Co.

Machinery.
See Charging Machinery.
Coal Gas Apparatus.
Conveyors.
Water Gas Apparatus.

Mains. Sullivan Bros.
See Compressors. Pipe. Lead

Mantles.
General Gas Light Co.
Welsbach Co.

Meters—Acetylene.
Equitable Meter Co.
Keystone Meter Co.
Pittsburgh Meter Co.

Meters—Air.
Equitable Meter Co.
Pittsburgh Meter Co.
United Gas Improvement Co.

Meter Locks. See Prepayment

Meters—Natural Gas.
Equitable Meter Co.
Keystone Meter Co.
Pittsburg Meter Co.
Standard Meter Co.
Sprague Meter Co.

Meters—Prepayment.
American Meter Co.
Dickey & Co., C. H.
Equitable Meter Co.
Griffin & Co., John J.
Heime & McIlhenny.
Keystone Meter Co.
McDonald & Co., D.
New York Improved Meter Co
Pittsburgh Meter Co.
Sprague Meter Co.
Tufts Meter Co., Nathaniel

Meters—Proportional.
Equitable Meter Co.
Pittsburg Meter Co.
Rotary Meter Co.

Meter Provers. See Provers.

Meters—Regular.
American Meter Co.
Dickey & Co., C. H.
Equitable Meter Co.
Griffin & Co., John J.
Heime & McIlhenny
Keystone Meter Co.

McDonald & Co.
New York Improved Meter Co.
Pittsburg Meter Co.
Standard Meter Co.
Sprague Meter Co.
Tufts Meter Co., Nathaniel.

Meters—Station.
American Meter Co.
Dickey & Co., C. H.
Equitable Meter Co.
Griffin & Co., John J.
Helme & McIlhenny.
McDonald & Co., D.
Rotary Meter Co.
Standard Meter Co.
Tufts Meter Co., Nathaniel.

Meters—Steam.
Gas Machinery Co.
United Gas Improvement Co.
Western Gas Construction Co.

Meters—Test.
American Meter Co.
Dickey & Co., C. H.
Equitable Meter Co.
Pittsburg Meter Co.
Standard Meter Co.

Meters—Wet.
American Meter Co.
Helme & McIlhenny.
Pittsburgh Meter Co.
Tufts Meter Co., Nathaniel.

Oil Tanks.
See Holders.

Outdoor Lighting Fixtures.
See Street Lamps.
Lamp Posts.

Patents. Burnham, R. E.

Paints.
Atlas Paint Co.
Dixon Crucible Co., Jos.

Photometers.
American Meter Co.
Connelly Iron, Sponge and Governor Co.

Plants—Complete.
See Engineers—Contracting.

Pipe.
Davis & Farnum Mfg. Co
Donaldson Iron Co.
Simmons Co., John.
Sullivan Bros.
Wood & Co., R. D.

Pipe Covering.
Armstrong Cork and Insulation Co.

Pipe Laying.
New York Lead Wool Co.
Sullivan Bros.
United Lead Co.

Prepayment Meters.
See Meters.

Processes.
See Coal Gas Apparatus.
Water Gas Apparatus.
Hydrogen Gas Apparatus.

Producer Gas Plants.
Gas Engineering Co.
Gas Machinery Co.
Wood & Co., R. D.

Provers—Meter.
American Meter Co
Dickey & Co., C. H.
Equitable Meter Co.
Helme & McIlhenny.
McDonald & Co., D.
Pittsburgh Meter Co.
Standard Meter Co.

Pumps—Drip.
American Meter Co.

Purifiers.
Bartlett-Hayward Co.
Connelly Iron Sponge and Governor Co.
Cruse-Kemper Co.
Davis & Farnum Mfg. Co.
Gas Engineering Co.
Gas Machinery Co,
Isbell-Porter Co.
Kerr Murray Co.
Lloyd Construction Co
Stacey Mfg. Co.
United Gas Improvement Co.
Western Gas Construction Co.
Wood & Co. R. D.

Purifying Materials.
Behrend, F.
Connelly Iron Sponge and Governor Co.
Gas Machinery Co.
Iron Hydroxide Co.
United Gas Improvement Co.

Purifier Trays.
Iron Hydroxide Co.
Kerr Murray Co.

Pyrometers.
Bristol Co.
Brown Instrument Co.

Ranges—Gas.
Crane Co., Wm. M.
Eclipse Gas Stove Co.

Regulators. See Governors.

Retorts—Horizontal & Inclined.
Didier-March Co.
Gardner, Jr., Co., James.
Gas Machinery Co.
Gautier & Co., J. H.
Improved Equipment Co.
Maurer & Son. H.
Missouri Fire Brick Co.
Parker-Russell Mining and Mfg. Co.

Retorts—Silica and Clay.
Improved Equipment Co.
Russell, D. R., Engineering & Devel. Co.

Retorts—Vertical.
Didier-March Co.
Gas Machinery Co.
Improved Equipment Co.
Parker-Russell Mining and Mfg. C

Rubber Goods.
See also Bags.

Services.
Sullivan Bros.
See also Pipe.

Service Cocks.
American Meter Co.
See also Cocks.

Scrubbers.
See Purifiers.

Scrubber Trays.
See Purifier Trays.

Specials. See Pipe.

Steel Construction.
See Iron Work.

Stoking Machinery.
See Charging Machinery.

Stopppers—Gas Main.
Safety Gas Main Stopper Co.

Storage Tanks.
See Holders.

Street Lamps.
Miner, Thos. T. W.
Welsbach Street Lighting Co.

Structural Iron Work.
See Iron Work.

Tar Extractors.
See Coal Gas Apparatus.
Water Gas Apparatus.

Temperature Controlling Devices.
American Gas Furnace Co.

Testing.
Electrical Testing Laboratories.

Testing Apparatus.
See Instruments.

Thermometers.
American Meter Co.
Bristol Co.
Brown Instrument Co.
Gas Appliance Sales Co.
Gas Machinery Co.

Thermostats.
Bristol Co.

Time Recording Mechanism.
Bristol Co.

Tips. Gas Tip Self-Lighter Co

Tools.
Safety Gas Main Stopper Co.

Tubing.
See Rubber Goods.

Valves.
Bartlett-Hayward Co.
Davis & Farnum Mfg. Co.
Gas Machinery Co.
Isbell-Porter Co.
Kerr Murray Co.
Lloyd Construction Co.
Ludlow Valve Mfg. Co.
Roots Co., P. H. and F. M.
Stacey Mfg. Co.
Western Gas Construction Co.
Wood & Co., R. D.

Vertical Retorts.
See Retorts.

Washers.
See Purifiers.

Water Heaters.
Crane Co., Wm. M.
Eclipse Gas Stove Co.

Water Gas Apparatus.
Bartlett-Hayward Co.
Gas Engineering Co.
Gas Machinery Co.
Stacey Mfg. Co.
United Gas Improvement Co.
Western Gas Construction Co.

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Water Tanks. See Holders.

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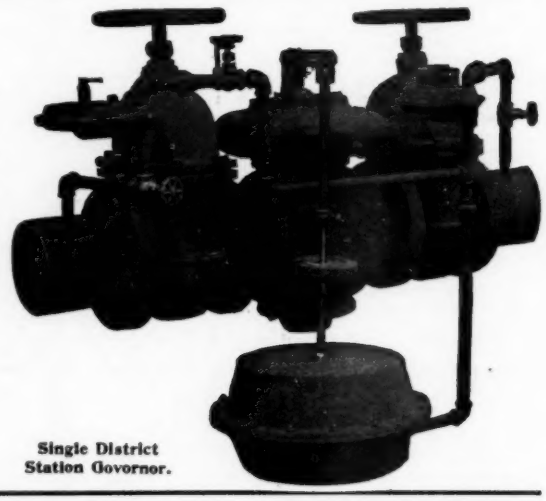

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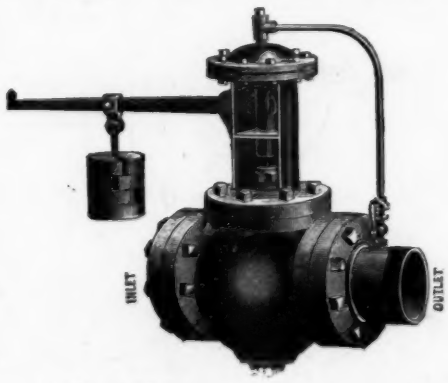

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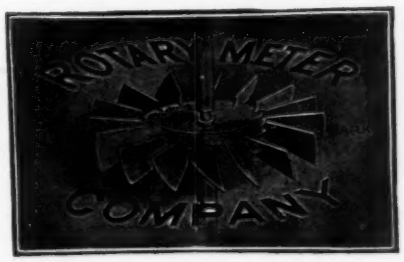

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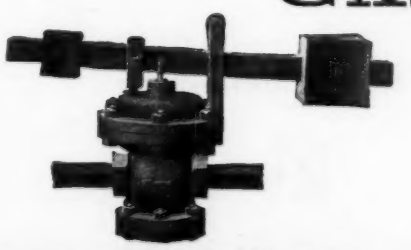

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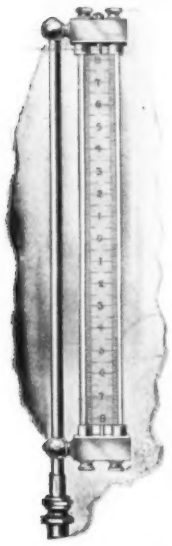

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